LOS ESTEROS CRITICAL ENERGY FACILITY
APPLICATION FOR CERTIFICATION

Volume 1

Prepared for

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Contents

Tables

Figures

SECTION 1

Executive Summary

1.1 Project Overview

This Executive Summary comprises the following sections. Section 1.1 is a project overview of the proposed Los Esteros Critical Energy Facility (LECEF). Section 1.2 provides a general project schedule, and Section 1.3 provides project ownership details. The project alternatives are discussed in Section 1.4. The environmental considerations are discussed in Section 1.5. Key benefits of the project are discussed in Section 1.6, and the list of persons who prepared the Application for Certification (AFC) is referenced in Section 1.7. An analysis of the project's conformance to the California Energy Commission's 4-month AFC siting program is presented in Section 1.8.

Calpine c*Power (c*Power) proposes to develop a natural-gas-fired generating facility in the north part of the City of San Jose (see Figure 1.1-1). Phase 1,which will consist of four simple cycle combustion turbines and associated accessory equipment. Phase II, currently being considered for future development and permitting, will be the conversion from simple cycle to combined cycle by adding four Heat Recovery Steam Generators (HRSGs), two Steam Turbine Generators (STGs), and associated accessory equipment for a generation capacity of approximately 260 MW. Phase III will include installation of equipment and systems to provide cooling and other services to the planned Dataport "Super Hub" Server Farm.

Phase I of the LECEF will be a nominal 180-megawatt (MW) natural-gas-fired simple cycle peaking facility. The site is located in north San Jose, California at 1515 Alviso-Milpitas Road (see Figure1.1-2). The site is on the north side of State State Route 237 near Coyote Creek and its adjacent flood control channel which is to the east of the site. West of the site is WPCP buffer lands, north-west of the site is the Water Pollution Control Plant, and north of the site is PG&E's planned Los Esteros Substation, as approved by the PUC, and the WPCP sludge drying ponds.

This project is being proposed as mitigation for the U.S. Dataport (USD) Planned Development Zoning Project (PDZ) approved by the City of San Jose at a City Council Meeting on April 3, 2001[1]. The U.S. Dataport PDZ Project included the Central Reliability Energy Center (CREC), composed of 4 dual-fuel-fired 10 MW turbines and 6 oil-fired 1.66 MW emergency engine generators, and the U.S. Dataport Campus including a total of 84, two-MW diesel back up generators for emergency power generation.

LECEF will consist of the following features, shown on Figure 1.1-3:

- A 180-megawatt (MW) nominal, natural-gas-fired, simple-cycle generating Facility consisting of four modern combustion turbines.

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[1] San Jose City Council Meeting Synopsis for April 3. 2001, can be viewed on-line at: http://www.ci.san-jose.ca.us/cty_clk/4_3_01docs/4_3_01s.htm
San Jose City Council Resolution No. 70259 is included as part of Appendix 8.4-1

- A 115-kilovolt-(kV) switchyard.
- Approximately 200[2] feet of underground transmission line to Pacific Gas & Electric's (PG&E) new Los Esteros Substation adjacent to the project site.
- Approximately 2,700 foot primary access road.
- Approximately 2,700 feet of waste water discharge line.
- Approximately 100[3] foot secondary access road (for both construction and operation).
- Approximately 550 feet of new natural gas supply line.
- Approximately 1,000 feet of recycled water supply line.
- Approximately 750 feet of stormwater drainage.
- Connection to the PG&E access road to serve as both primary construction access and emergency access during operation.

The Applicant, c*Power, has purchased a 55-acre parcel of agricultural land. The actual facility site will comprise 15 acres. The parcel is located in Township 6 South, Range 1 West; Latitude 25°'13", Longitude 122°'"; UTM zone 10, easting 594,600, northing 4,142,500. The legal description of the 15-acre parcel is included in Appendix 1A. Figure 1.1-3 shows the proposed routes for linear facilities.

The project site is at an elevation of approximately 15 feet above sea level. The nearest residences are located approximately 0.6 mile southwest, 0.8 mile east, and 1.4 miles southeast of the center of the project site. San Francisco Bay lies approximately 7 miles west-northwest of the site. This project site is also strategically located near critical infrastructure, reducing the need for long linear facilities (water and natural gas pipelines and electrical transmission lines) and further minimizing the environmental impacts associated with construction and operation of the linear facilities.

The San Jose City Council approved annexation to the City of San Jose from the County of Santa Clara on June 19, 2001. The San Jose General Plan designates the site as Light Industrial. City Ordinance 26343, dated April 3, 2001, has zoned the property a Planned Development[4] (PD). A rezoning application will be submitted to modify the specified zoning to be consistent with this AFC.

PG&E has received approval from the California Public Utilities Commission for the siting the Los Esteros Substation. The substation will be located along the north-western edge of the LECEF project site. The electrical transmission line would run north from the site underground approximately 200 feet into the adjacent new Los Esteros substation.

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[2] The Los Esteros Substation is adjacent to LECEF; therefore the interconnection will exist entirely internal to the two Facilities. The estimated length from the point of interconnection to LECEF is 200 feet. Upon entering LECEF, the underground line will travel another 150 to 200 feet.

[3] The secondary access road connects the Alviso-Milpitas Road to the primary access road 100 feet away. The combined primary and secondary access road is 450-feet, the length of which is included only in the primary access road length.

[4] The specific zoning, PDSCH # 00-06-048, is included as Appendix 8.4-1

If the Los Esteros Substation is not completed in a timely manner, then one of the following two electrical transmission alternatives, listed in order of preference, will be temporarily incorporated into the project's design:

- The more preferable alternative would be PG&E advancing the construction schedule of the Los Esteros-Montague circuit from the Los Esteros Substation to the inter-tie into the existing Nortech-Trimble 115 kV line located at the intersection of the Zanker Road and State Route 237.
- The less preferable alternative would be c*Power building a temporary wood pole line to the intersection of the Zanker Road and State Route 237, for a distance of approximately 2,000 feet.

The project would use gas from both of PG&E's 101 and 109 pipelines located approximately 550 feet south of the project site (Figure 1.1-3). A 10-inch pipeline would be constructed from the PG&E pipeline tap point to the project site. Development of a generating facility in the area is consistent with the existing and planned utility infrastructure.

The water supply for the project will be provided by San Jose/Santa Clara Water Pollution Control Plant (SJ/SC WPCP) through the South Bay Water Recycling (SBWR) program. The cities of San Jose and Santa Clara jointly own the WPCP facility, but the City of San Jose operates and maintains the facility. Connection to the SBWR existing recycled water pipeline would require the construction of a 1,000-foot pipeline as shown on Figure 1.1-3. The pipeline is routed south of the project site and turns west, along an existing utility corridor, to connect to the existing SBWR pipeline parallel to State State Route 237 on the adjacent WPCP buffer lands. The project is in the SBWR's recycled water service area, and the City of San Jose has adequate recycled water supplies to serve the project, as indicated in its letter of July 6, 2001 (Appendix 8.14A). Potable water for the operation of the facility will be trucked to the project. No potable water pipelines are planned as part of the project.

Primary access to the project site (see Figure 1.1-3) will be provided from Zanker Road along a 2,700 foot, two-lane road along the northern half of the route approved for the U.S. Dataport project. Secondary access will be provided by an interconnection from the primary access road to the Alviso-Milpitas Road of less than 100 feet. Emergency access will be available via PG&E's proposed access road to the Los Esteros Substation. As shown on Figure 1.1-3, PG&E's access road proceeds from Zanker Road along the northern edge of the WPCP buffer land then turns south adjacent to the western property line and continues until it abuts the LECEF site such that LECEF does not need to construct additional roadway.

Parcel numbers and the names of the owners of land within 1,000 feet of the site are included in Appendix 1B. The landowners that the natural gasline, electric transmission line, and waterline will cross (or encroach upon) and assessor parcel maps showing the approximate location of these utility lines are included in Appendix 1B. Figure 1.1-4 shows the jurisdiction of property owned by the Applicant.

The electrical generation will consist of four combustion turbine generators (CTGs), with a nominal total generating capacity of 180 MW. The turbines are expected to be General Electric LM 6000 (PC) units. A 2-cell mechanical-draft evaporative cooling tower will also be installed to provide cooling water for the combustion turbines. Additional auxiliary equipment will include a natural-gas-fired 750-kW emergency generator and a 370-horsepower (hp) diesel fire pump.

A schematic arrangement of the plant is presented on Figure 1.1-5. A full-page artist rendering of the site prior to and after construction are shown on Figures 1.1-6 and 1.1-7.

1.2 Project Schedule

Phase I construction is planned to begin in December 2001 and be completed by March 2002. Plant testing will commence in the April 2002, and full-scale commercial operation is expected to commence in May 2002.

1.3 Project Ownership

Calpine c*Power is the sponsor of the LECEF, which will be owned by Calpine c*Power, a wholly owned subsidiary of Calpine Corporation. Calpine is a publicly traded company with the NYSE stock symbol CPN.

1.3.1 Other Agreements

On June 28, 2001, the State of California announced the execution of a contract with Calpine Energy Services for the purchase of 180 megawatts of electricity from the LECEF (referred to as the North San Jose Project) for the period of May 2002 to April 30, 2005. The contract allows for the increase in power sales from 180 MWs to 225 MWs after one year. A redacted copy of this agreement can be found in Appendix 1C.

1.4 Project Alternatives

A "No Project" Alternative was considered and rejected as inconsistent with California's program to develop emergency power generation facilities, the objective of which is to increase reliability and stabilize prices by increasing electric supplies. In addition, the "No Project" Alternative would result in the Applicant violating the terms of the Power Sales Agreement with the California Department of Water Resources. Additionally, the "No Project" alternative would require the U.S. Dataport Project to use electricity from the grid, which puts the project in conflict with the City of San Jose's CEQA decision to have the project be electrically self-sufficient. Other possible alternative sites in the general vicinity of the proposed site were reviewed and found to be less acceptable than the site described in Section 1.1. Alternative routes for the natural gas line, electric transmission line, and waterlines were not considered due to the proximity of existing infrastructure to the proposed site. A 2,000 foot temporary alternative electrical transmission line is included only in the unlikely event that PG&E's Los Esteros Substation completion is delayed.

Several alternative generating technologies were reviewed in a process that led to the selection of a modern, yet proven, combustion turbine simple-cycle arrangement for LECEF using natural gas for fuel. The alternative technologies included conventional oil and natural-gas-fired plants, combined-cycle combustion turbines, biomass-fired plants, waste-to-energy plants, solar plants, wind generation plants, and others. None of these technologies was considered equal to or better than the simple-cycle technology selected for the project. A complete discussion of project alternatives is presented in Section 9.0 of this AFC. Electric transmission connection alternatives, natural gas pipeline alternatives, and waterline alternatives are presented in Sections 5.0, 6.0, and 7.0, respectively.

1.5 Environmental Considerations

Sixteen areas of possible environmental impact from the proposed project were investigated. Detailed descriptions and analyses of these areas are presented in Sections 8.1 through 8.16 of the AFC. Without the implementation of mitigation measures, several of these areas could have environmental effects. The possible effects of key areas are described briefly in this section.

Because LECEF is being proposed as mitigation to the U.S. Dataport (USD) project that has been conditionally approved with over-riding considerations by the City of San Jose, LECEF can be considered as a modification to USD under the California Environmental Quality Act. As such, environmental impacts from LECEF, as mitigated, will reduce USD environmental impacts that have been previously accepted with over-riding considerations.

1.5.1 Air Quality

The site is located in the Bay Area Air Quality Management District (BAAQMD), a State of California ambient air quality standards attainment area for both ozone and particulate matter with a diameter less than 10 microns (PM_{10}). An assessment of the impact to air quality was performed using detailed air dispersion modeling. The air impacts from the project will be mitigated by the advanced nature of the combustion turbine emission control technology. Also, emission reduction credits (ERCs) will be obtained to offset volatile organic compounds (VOCs) and oxides of nitrogen (NO_x) (both precursors of ozone).

Calpine has identified ERCs for LECEF as follows:

- NO_x—The Gilroy Energy Center Phase II Project, which includes retrofitting SCR to control NO_x emissions, will result in an excess of approximately 90 tpy of NO_x ERCs. Since LECEF requires a total of 88.4 tpy NO_x ERCs, the future Gilroy ERCs will be used to entirely offset NO_x emissions
- POC—Two certificate numbers are available for LECEF to use to offset POC emissions. Certificate No. 751 has 24.7 tpy remaining after the Gilroy Energy Center Phase II Project and Certificate No. 752 has 25.1 tpy to offset POC emissions. As LECEF requires 20.9 tpy POC ERCs, either certificate can be used to entirely offset POC emissions.

These mitigation measures will result in the project having no significant adverse impact on air quality. In addition, a cumulative impact analysis was performed for the project, based on emission data from the BAAQMD. The results of the cumulative impact analysis show that the project does not result in any cumulative impacts. See Section 8.1 for a detailed analysis of air quality.

1.5.2 Water Resources

Recycled water will be provided by WPCP through the SBWR program. SBWR water will be used for both cooling water and NO_x suppression injection water requirements. Any interruptions in the availability of the water supply will be mitigated by the provision of onsite recycled water storage tanks for fire, cooling water, and NO_x suppression system makeup. Discharge wastewater will be directed back to the WPCP for disposal.

Potable water will be provided by the construction contractor and operations management, respectively, during the construction and operation phases of the project. The amount of potable water required is expected to be low, and will be supplied to the site in water trucks operated by local drinking water suppliers.

1.5.3 Visual

LECEF will be developed in the northern portion of the City of San Jose that encompasses a large area of flat bay plain lands located around the southern edge of San Francisco Bay. Although the resident population in this area is relatively low, the site is seen by large numbers of people as they travel along State Route (SR) 237. The overall landscape pattern consists of flat, open plains dissected by bands of riparian vegetation growing along the area's sloughs and creeks.

The project will change the composition and character of the area to a degree in that the project's grouping of industrial-appearing features will be inserted into a landscape that now has a more open and less intensely developed appearance. However, the project's elements will not be out of scale with the transmission towers and other infrastructure elements now visible in the foreground of the area or with the high ridge that forms the backdrop. Additionally, with the planned development associated with both the adjacent Los Esteros Substation and transmission towers and the adjacent USD Project, the LECEF becomes a smaller element set in the middle of much more massive and visually dominant structures.

The LECEF project will not have effects on visual resources that will be significant under CEQA

1.5.4 Biology

The project site comprises ruderal habitat, consisting primarily of annual grasslands. It is a widespread and common habitat type and supports primarily weedy and opportunistic species that are not native. Riparian habitat adjacent to Coyote Creek approximately 1,000 feet east of the project site could potentially support various aquatic and sensitive species, but the distance from the site provides a substantial buffer to reduce impacts to these species. Surveys of the project site in April, June and July of 2000 did not indicate special status plants, burrowing owls, or other sensitive species on the site, although birds and mammals could occasionally use the site for foraging.

Ten trees defined as significant under City of San Jose Code were identified near the project site or linear facilities. The project will not affect any of these ordinance trees.

No direct loss of serpentine habitat will occur from the LECEF project; however, emissions of NOx from the project have the potential to contribute to cumulative adverse impacts on serpentine habitat for the Bay Checkerspot Butterfly, a federal-listed endangered species. Nitrogen compounds emitted primarily from vehicles facilitate the establishment and intrusion of non-native plants into serpentine habitat, effectively replacing the native species on which the butterfly depends. The location and amount of nitrogen deposition from the proposed facility were modeled to determine LECEF's contribution to habitat degradation. The analysis determined that LECEF's maximum impact on serpentine habitat, located approximately 12 miles to the southeast, contributed to less than one percent of the cumulative impact.

1.5.6 Noise

Ambient noise measurements were taken to determine the L_{90} (the noise level that is exceeded during 90 percent of the measurement period) nighttime noise level at the nearest sensitive receptor. Noise modeling was used to determine the contribution to the nighttime ambient levels the plant would make during operations. Nighttime noise levels at the nearest residences will be approximately 59 decibels A-rated (dBA), which is within county/local requirements. Since the noise level at the nearest receptor will be in accordance with county/local LORS, no adverse impact is expected from to the normal operation of the facility.

1.6 Key Benefits

1.6.1 Environmental

The project will employ advanced, high-efficiency combustion turbine technology and Selective Catalytic Reduction (SCR) and an oxidation catalyst system to minimize emissions from the Facility. NO_x emissions, a precursor to smog produced by LECEF, will be approximately 90 percent less than those for existing older generating facilities. In addition to the significant reduction of emissions, the project's operating efficiency will be such that the plant will consume less fuel than existing older plants of similar size. LECEF will also obtain emission offsets to more than compensate for the emissions. Hence, the project will provide a net air quality improvement for the region.

The project will also minimize freshwater use. Recycled water from the SBWR program will be used for plant cooling and process water needs. This will allow for the continued commercial use of a wastewater stream that might otherwise be discharged into the San Francisco bay without providing any useful or beneficial application.

1.6.2 Employment

The project will provide for a peak of approximately 311 construction jobs over a 4-month period and up to 20 skilled, family-wage positions throughout the life of the plant.

1.6.3 Tax Base

LECEF will be a significant tax contributor, supporting the services and programs of Santa Clara County and the City of San Jose. The California State Board of Equalization has determined that a power generation Facility should be assessed at the county level, resulting in an allocation to the local tax jurisdiction where the Facility is located.

1.6.4 Energy Efficiency

LECEF will be an efficient, environmentally responsible source of economic and reliable energy to serve the growing energy demands of the deregulated California Energy Market. LECEF will help ensure reliable, clean, low-cost electricity in the future.

1.7 Persons Who Prepared the AFC

Persons with primary responsibility for the preparation of each section of this AFC are listed in Appendix 1D.

1.8 Conformance to the 4-Month Siting Program

The LECEF is being proposed as mitigation to the USD project which has been conditionally approved with over-riding considerations by the City of San Jose. As such, LECEF can be considered as a modification to USD under the California Environmental Quality Act (CEQA). Because environmental impacts from LECEF, as mitigated, will reduce USD environmental impacts that have been previously accepted with over-riding considerations, the CEC staff assessment would be equivalent to a Mitigated Negative Declaration (MND) under CEQA, providing conformance to CEC's 4-Month Siting Program. To facilitate this determination, the Applicant proposes the Conditions of Certification contained in Appendix 1E.

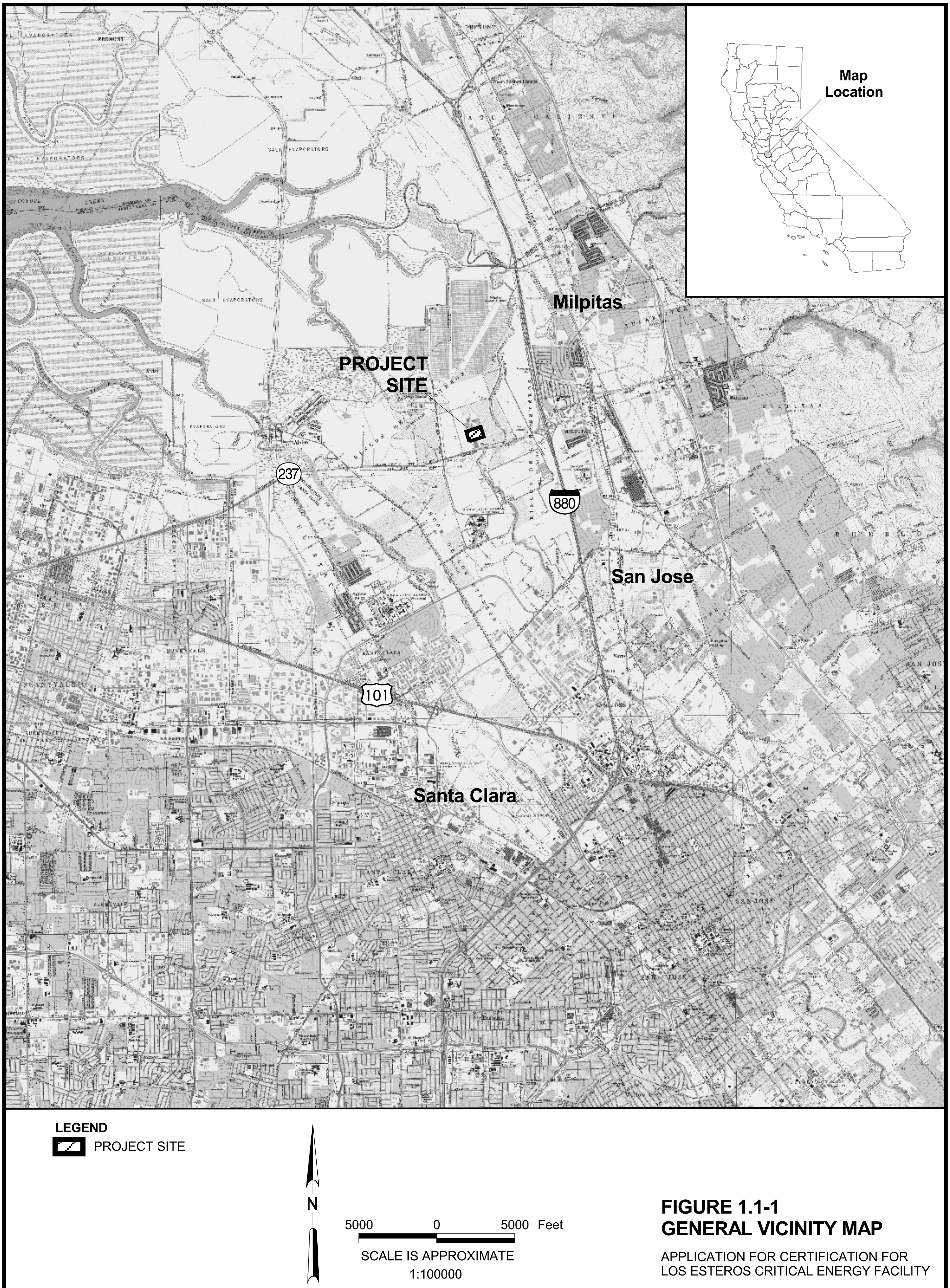

FIGURE 1.1-1
GENERAL VICINITY MAP

APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

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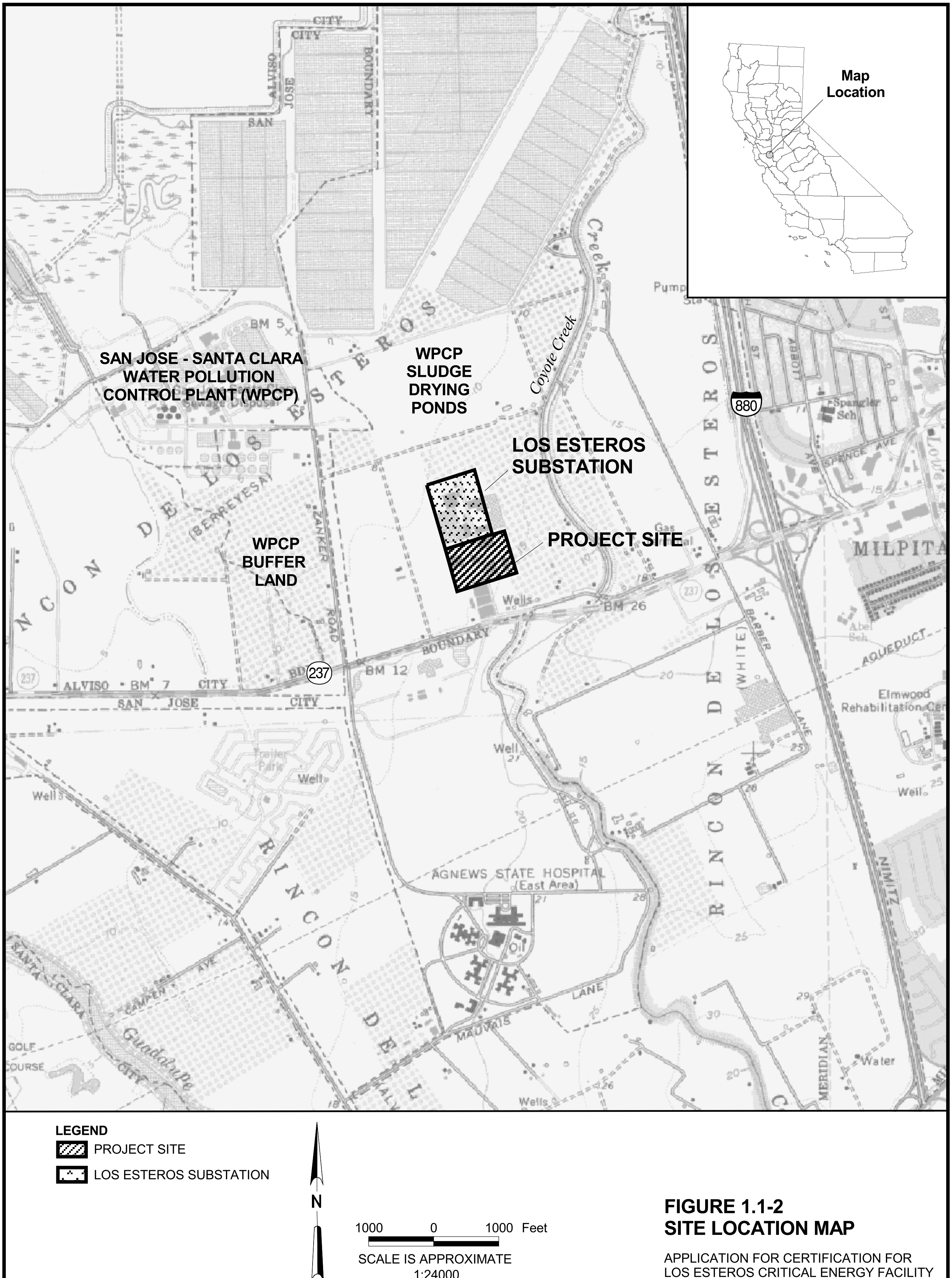

FIGURE 1.1-2
SITE LOCATION MAP

APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

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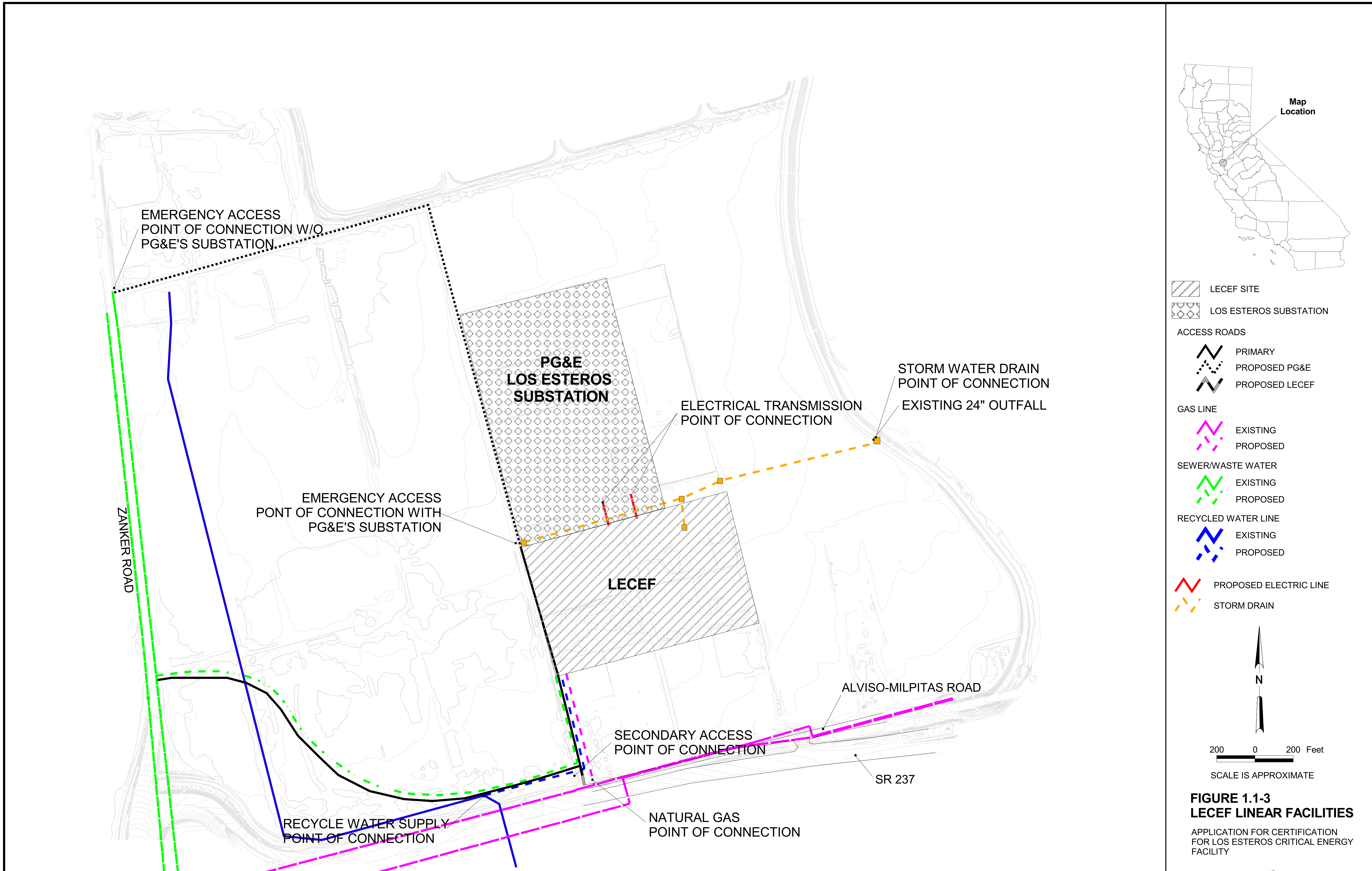

FIGURE 1.1-3
LECEF LINEAR FACILITIES

APPLICATION FOR CERTIFICATION
FOR LOS ESTEROS CRITICAL ENERGY
FACILITY

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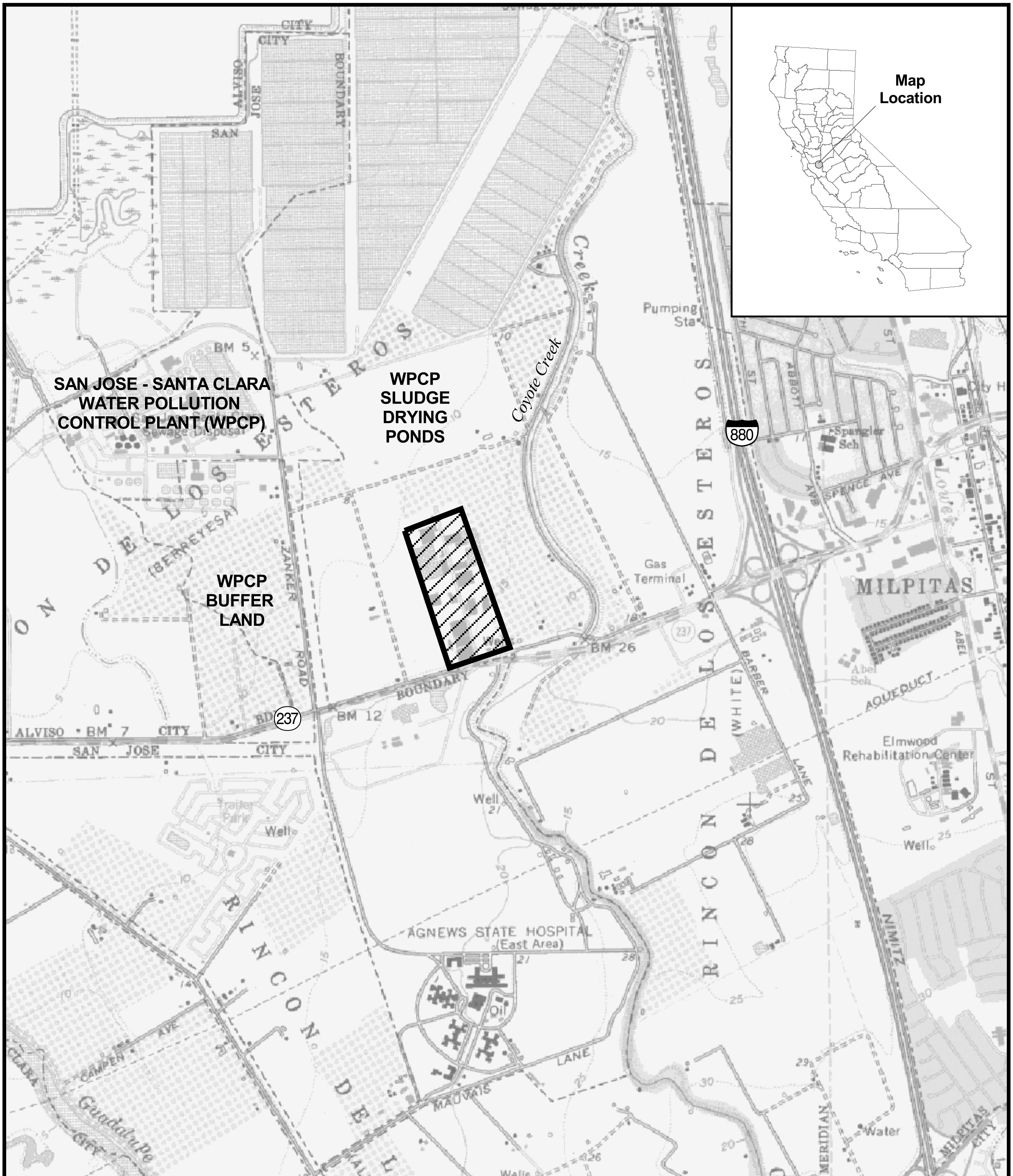

LEGEND

APPROXIMATE AREA CONTROLLED BY c*POWER

N

1000 0 1000 Feet

SCALE IS APPROXIMATE

1:24000

FIGURE 1.1-4
JURISDICTION OF PROPERTY UNDER c*POWER INTEREST

APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

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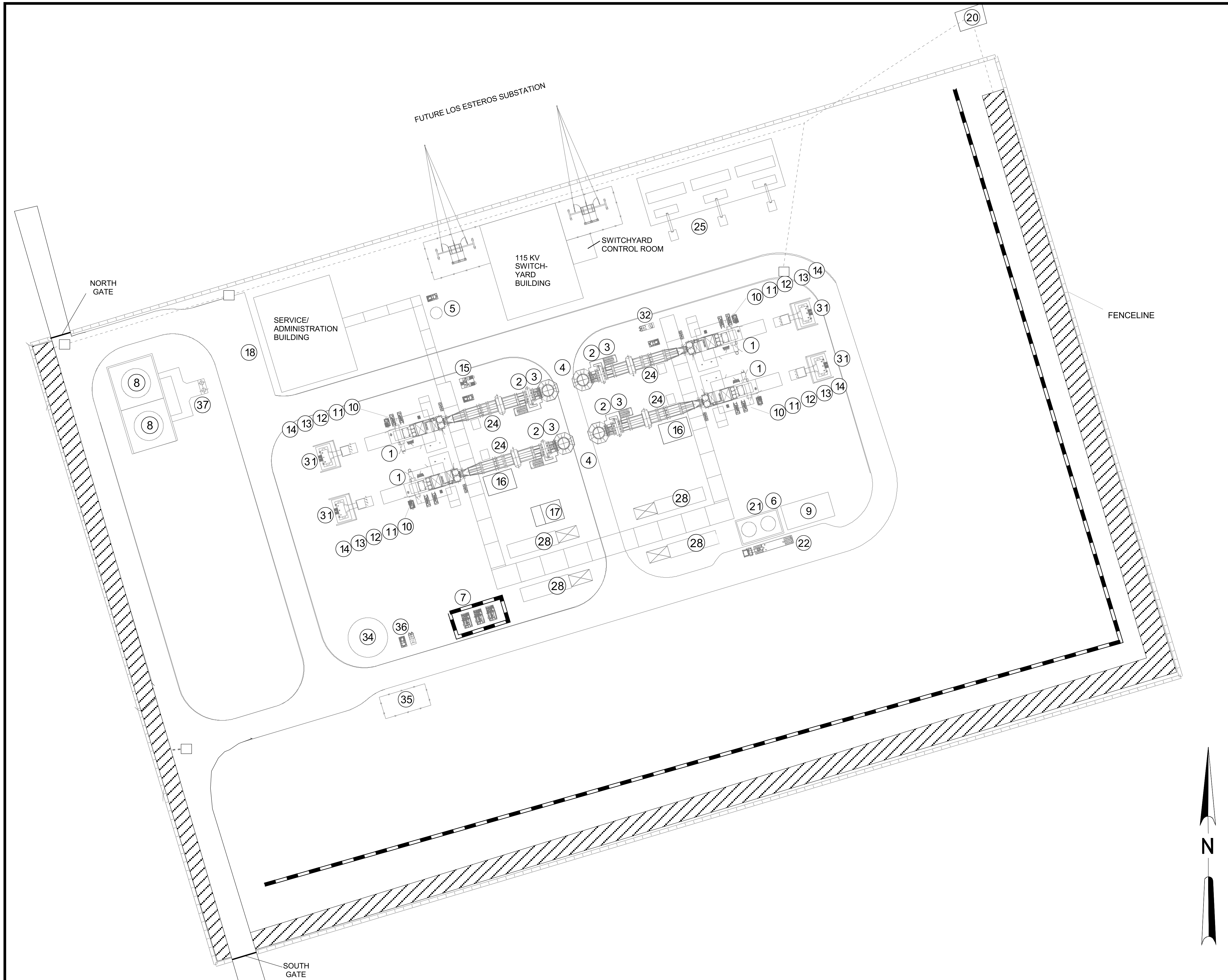

EQUIPMENT

ITEM NUMBER	DESCRIPTION
1	COMBUSTION TURBINE ENGINE
2	HRSG BOILER (DUCT ONLY)
3	SCR UNIT
4	EXHAUST STACK
5	POTABLE WATER TANK
6	FUTURE AMMONIA TANK
7	FUEL GAS COMPRESSOR
8	COOLING TOWER (2 CELLS)
9	LUBE OIL STORAGE
10	STARTING HYDRAULIC SKID
11	PERFORMANCE SKID
12	DEMIN. WTR. FILTER SKID
13	AUXILIARY WATER INJECTION PUMPS
14	GAS FUEL FILTER
15	AIR COMPRESSOR/AIR DRYER
16	OIL/WATER SEPARATOR AND WASH WATER DRAIN TANK
17	WASTE WATER SUMP
18	PARKING
20	STORMWATER DISCHARGE SUMP/PUMP
21	AMMONIA STORAGE TANK AND PUMP
22	AMMONIA TANK LOADING AREA
24	AMMONIA VAPORIZER SKID
25	SWITCHGEAR MEDIUM VOLTAGE
28	CTG CHILLER SKID
31	50 MVA TRANSFORMER
32	BLACK START GENERATOR
34	FIRE WATER TANK
35	FUEL GAS METERING
36	FIREWATER PRIMARY AND EMERGENCY PUMPS
37	AUXILIARY COOLING WATER PUMP

LEGEND

UNDERGROUND STORMWATER DRAIN LINE

SOUND WALLS

STORMWATER RETENTION AREA

100 0 100 Feet

1:1200

NOTE: Drawing is to scale. Width of the sound walls and the width of the retention area are not to scale.

FIGURE 1.1-5
PLANT SITE PLAN

APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

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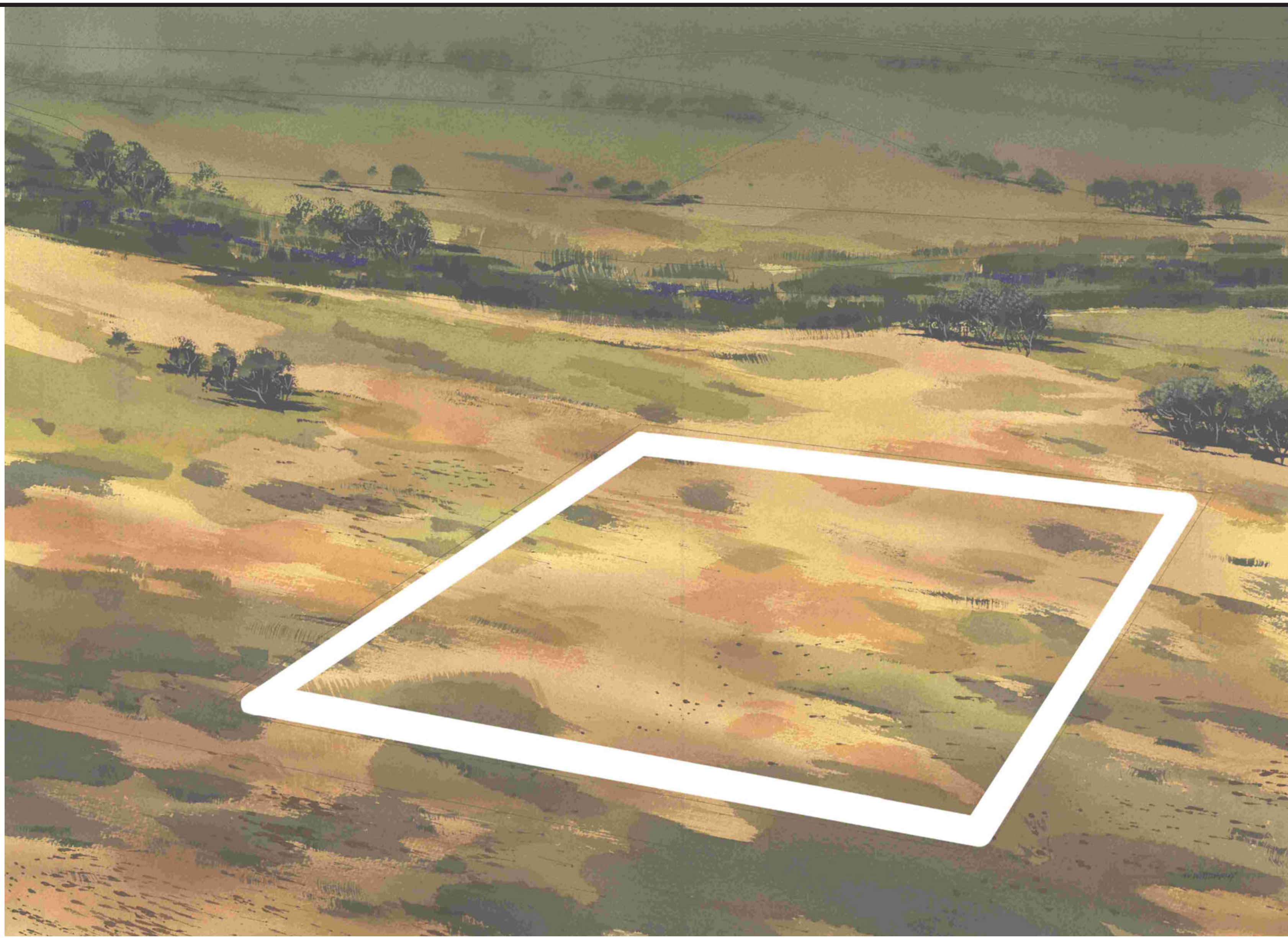

NOTE: Existing greenhouse buildings not shown.

FIGURE 1.1-6
ARTIST RENDERING OF THE PROJECT SITE PRIOR TO CONSTRUCTION
APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

D072001001RDD_23 (7/30/01)

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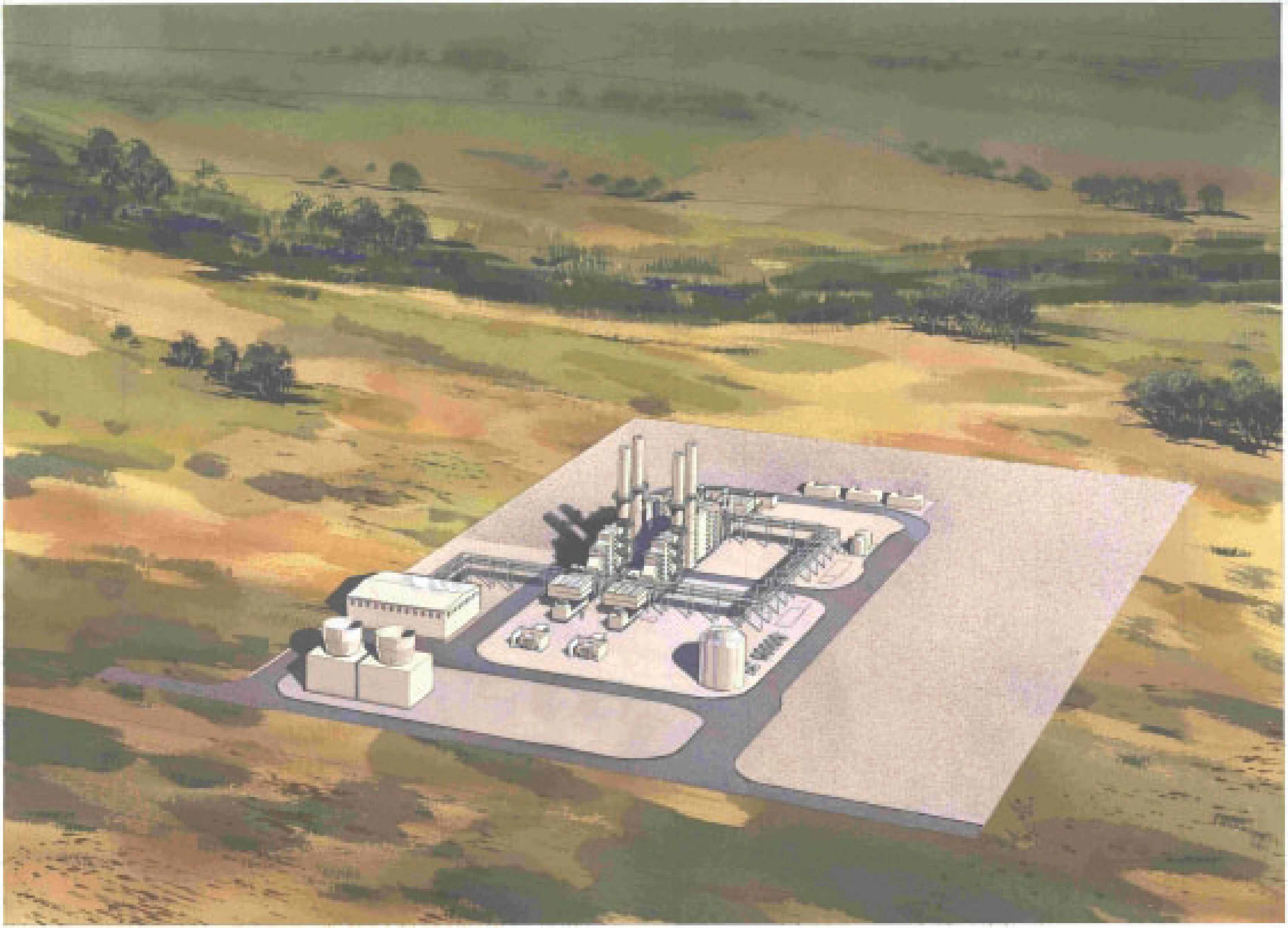

NOTE: Only one tank to be installed during phase 1.

FIGURE 1.1-7
ARTIST RENDERING OF THE PROJECT SITE AFTER CONSTRUCTION
APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

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D072001001RDD_07 (7/30/01)

SECTION 2

Project Description

2.1 Introduction

This project will be designed, permitted, built, and operated as a permanent facility in three phases. Phase I, which will consist of four simple cycle LM6000 Combustion Turbine Generators (CTG) and associated accessory equipment, is the current project as described in this 4-Month Application for Certification (AFC). Phase II will be the conversion from simple cycle to combined cycle by adding four Heat Recovery Steam Generators (HRSGs), two Steam Turbine Generators (STGs), and associated accessory equipment for a generation capacity of approximately 260 MW. Phase III will include the installation of equipment and systems to provide cooling and high reliability and critical energy services to the planned Dataport "Super Hub" Server Farm.

2.1.1 U.S. Dataport PDZ Approved EIR

This project is actually being proposed as mitigation for the U.S. Dataport (USD) Planned Development Zoning (PDZ) Project approved by the City of San Jose at a City Council Meeting on April 3, 2001[1]. The U.S. Dataport PDZ Project included the Central Reliability Energy Center (CREC), composed of 4 dual-fuel-fired 10 MW turbines and 6 oil-fired 1.66 MW emergency engine generators, and the U.S. Dataport Campus including a total of 84, 2-MW diesel generators for emergency power generation[2].

The U.S. Dataport PDZ Project was approved with conditions[3]. Key conditions that necessitated modification to the CRE C portion of the project are presented below.

1. **Energy and Environment.** Prior to issuance of PD permits for any campus building which will draw power from the electrical grid, the applicant has agreed to and shall limit the use of diesel generators to 25 hours per year and provide to the Director of Planning a plan which achieves the following goals:

    a. Elimination of the use of diesel generators as the source of backup power for the U.S. Dataport campus buildings.

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1 San Jose City Council Meeting Synopsis for April 3. 2001, can be viewed on-line at: http://www.ci.san-jose.ca.us/cty_clk/4_3_01docs/4_3_01s.htm

2 U.S. Dataport PDZ DEIR and FEIR, which are located on-line at:
http://www.ci.san-jose.ca.us/planning/sjplan/eir/USDataport/US-Dataport-Text.htm
http://www.ci.san-jose.ca.us/planning/sjplan/eir/USDfinal/ftoc.htm

3 On March 14, 2001, the San Jose Planning Commission certified the U.S. DataPort DEIR and FEIR as complete, and recommended approval of the project to the San Jose City Council. The EIR determination was appealed to the City Council. On April 3, 2001, the San Jose City Council, acting as lead agency under CEQA, approved the U.S. DataPort project and adopted an ordinance (No. 26343) to prezone and rezone the 174-acre U.S. DataPort site. At the same time, the City Council adopted a resolution (No. 70259) making required CEQA findings concerning the mitigation measures proposed in the EIR and adopting a statement of overriding considerations. (See Appendix 8.4-1 for copies of the ordinance and resolution.)

b. Implementation of environmentally superior technology for power generation and supply alternatives that will reduce impacts to local and regional air quality to the extent such alternatives are available, reliable, and commercially feasible.

c. Use of best commercially feasible available technology for cooling tower plume visibility reduction.

d. Implementation of conditions a. through c. above in a manner that is compatible with the City's General Plan; the Mayor's Smart Energy Strategy recently approved by the Council that calls for energy generation facilities located in appropriate industrial zones; California laws and regulations; and the Final Environmental Impact Report (FEIR).

2. **Backup power.** In the event that the applicant cannot secure a satisfactory location and permits for power generation, identify methods for ensuring a reliable source of power, or environmentally superior technology as described above, the Director of Planning shall issue all permits necessary for applicant to use emergency backup diesel generators for its campus buildings only under the following additional condition:

a. "The applicant shall limit the use of emergency diesel generators to not exceed 50 hours per year as described in the FEIR and shall be further subject to Bay Area Air Quality Management District regulatory requirements including any enforcement."

For purposes of CEQA compliance, c*Power proposes that the CEC Staff prepare their Staff Assessment (SA), their EIR substitute, for this project in the manner of a tiered environmental impact report, per Sections 21068.5, 21093, and 21094, Public Resources Code. The Applicant further proposes that the CEC Staff prepare the SA for this project in the manner of a subsequent environmental impact report, per Section 21157.1, Public Resources Code.

Because the lead agency for the CREC portion of the original U.S. Dataport PDZ Project has changed from the City of San Jose to the California Energy Commission (CEC), this document will reproduce, as appropriate, portions of the U.S. Dataport PDZ EIR. It should be noted that the DEIR and FEIR are located online as indicated in footnote 2 on the City of San Jose's website.

2.1.2 Los Esteros Critical Energy Facility

The Los Esteros Critical Energy Facility (LECEF) will be a nominal 180-megawatt (MW) natural-gas-fired simple cycle peaking facility. Electrical generation will be at 13.8 kilovolts, which will be stepped up with a 115-kilovolt (kV) switchyard. The preferred transmission line is an underground feeder, approximately 400 feet in length that will interconnect the LECEF facility with PG&E's new Los Esteros Substation (being constructed adjacent to the project site on its north side as approved by the Public Utilities Commission (PUC)).

Natural gas for the facility will be delivered through a new 550-foot long 10 inch diameter pipeline that will connect to existing PG&E lines 101 and 109, both of which are located adjacent to State Route 237, and within property controlled by the applicant.

Plant process water will be supplied by San Jose / Santa Clara Water Pollution Control Plant (WPCP) via a 1,000-foot pipeline from the existing recycled water main located within the City of San Jose's buffer land adjacent to the site.

Plant wastewater will be returned to San Jose / Santa Clara WPCP together with the facility's sanitary sewage via a 2,700 foot pipeline between 12 and 15 inches in diameter. This line will connect to one of two of the City's sanitary sewer lines (the 60 or 80-inch line) located in Zanker Road.

Stormwater will be collected onsite in the stormwater retention area. Stormwater will be discharged as appropriate via a 750-foot long stormwater drain that connects to an existing 20-inch diameter outfall located to the east of the site at the flood control channel adjacent to Coyote Creek.

Site access will be provided by a 2,700-foot two-lane road connecting to Zanker Road. The access road is the northern portion of the access road certified for the U.S. Dataport PDZ Project. Secondary access will be provided by a short connection to the Alviso-Milpitas Road and emergency access will be provided by PG&E's proposed access road to the planned Los Esteros Substation.

The site is located in north San Jose, California at 1515 Alviso-Milpitas Road. The site is on the north side of State Route 237 near Coyote Creek and its adjacent flood control channel which is to the east of the site. West of the site is WPCP buffer lands, north-west of the site is the Water Pollution Control Plant, and north of the site are WPCP sludge drying ponds. Figures 2.1-1 and 2.1-2 show the location of the generating facility, access roads, electric transmission line, natural gas supply line, and water supply and return lines and the stormwater discharge linear.

Property for the peaker project is approximately 55 acres and is owned by c*Power, whose parent company is Calpine Corporation. Additional information on ownership and location is presented in Section 1.

The San Jose City Council approved the annexation to the City of San Jose annexed from the County of Santa Clara (where it was zoned A20S) on June 19, 2001. The City of San Jose's General Plan designates the project site as Light Industrial. The City has zoned the property Planned Development PDSCH # 00-06-048, which is a detail specific form of zoning. A rezoning application is being submitted to make minor modifications consistent with this AFC. The City will be a joint applicant for the rezoning since the City owns a portion of the land subject to the zoning.

The following sections describe the design and operation of the LECEF and the associated electric transmission line, natural gas supply line, and water lines. Site selection and the alternative sites considered are presented in Chapter 9.

2.2 Project Description, Design, and Operation

This section describes the facility's conceptual design and proposed operation.

2.2.1 Site Plan and Access

The site arrangement shown in Figure 2.2-1 and the typical elevation views shown in Figure 2.2-2 illustrate the location and size of the proposed facility. Approximately 15 fenced acres will be required to accommodate the generation facilities. The construction laydown area will be located on the southern portion of the project site.

LECEF will be visually compatible with the planned U.S. Dataport development adjacent to the site and its natural setting.

The project site will be accessed via the permanent 2,700-foot-long, 2-lane road to be constructed to city standards, as certified as the northern half of the primary access in the U.S. Dataport FEIR. Secondary access to the project site will be from a short interconnection to the Alviso Milpitas Road. Construction access, and emergency access during operation, will be from the roadway being constructed by PG&E along the WPCP sludge ponds and down the western side of the project's property line. Most of the site will be paved to provide internal access to all project facilities and onsite buildings. Future development plans for U.S. Dataport will include a network of roads. It is intended that LECEF will connect to this road system when it is completed.

2.2.2 Process Description

Phase I

Phase I of the LECEF will consist of four General Electric LM6000 Sprint Combustion Turbine Generators (CTGs) equipped with water injection to control oxides of nitrogen (NO_x) emissions, power augmentation, and selective catalytic reduction (SCR) for further NO_x control, an oxidation catalyst, and associated support equipment.

Each CTG will generate a nominal 45 MW at ISO conditions. The project is expected to have an overall annual availability approaching 100 percent. The heat balance and water balance for simple cycle facility are shown in Figures 2.2-3 and 2.2-4.

Associated Phase I equipment will include a two-cell cooling tower for the inlet air chillers, and emission control systems necessary to meet the proposed emission limits. NO_x emissions will be controlled to 5 parts per million by volume, dry (ppmvd) basis corrected to 15 percent oxygen by a combination of water injection in the CTGs SCR systems in the exhaust stack transition. Carbon monoxide (CO) will be controlled to 6 ppmvd at 15 percent oxygen in the CTG combustors with an oxidation catalyst system. Precursor organic compound (POC) emissions will be controlled to 2 ppmvd at 15 percent oxygen.

Phase II

Phase II is a future development, under consideration, for the conversion from simple cycle to combined cycle and is not intended to be analyzed as part of this application. This second phase will add HRSGs, two steam turbines generators, additional cooling towers (CT's), circulating water pumps (CW Pumps), boiler feedwater pumps (BFW Pumps), water treatment, controls, and accessories to the original four LM6000 CTGs for combined cycle configuration. The generation capacity is expected to be approximately 260 MW upon completion of Phase II.

The CTG exhaust gases will be used to generate steam in the HRSGs. Steam from the 4 HRSGs will be admitted to two condensing STGs. Upon completion of Phase II, the facility is expected to have an overall annual availability approaching 100 percent.

Associated equipment for Phase II will include emission control systems necessary to meet the proposed emission limits. NO_x emissions will be controlled to 2.5 parts per million by volume, dry (ppmvd) basis corrected to 15 percent oxygen by a combination of water injection into the CTGs and SCR systems in the HRSGs. CO will be controlled to 6 ppmvd at 15 percent oxygen through the use of oxidation catalyst systems.

Phase III

Phase III is an additional future development for the addition of equipment and systems to provide cooling and high reliability and critical energy services to the planned Dataport “Super Hub” Server Farm. Equipment associated this third phase will include centrifugal and absorption chillers and additional cooling tower cells, water storage, water pumps and electrical switchgear.

2.2.3 Plant Cycle

CTG combustion air will flow through the inlet air filters and chiller coils and associated air inlet ductwork, be compressed, and then flow to the CTG combustion sections. Natural gas fuel will be injected into the compressed air in the combustion sections and ignited. The hot combustion gases will expand through the turbine sections of the CTGs, causing them to rotate and drive the electric generators and CTG compressors. The hot combustion gases will exit the turbine sections and enter HRSG shells and exit to the atmosphere through the exhaust stacks.

2.2.4 Combustion Turbine Generators

Thermal energy will be produced in the four CTGs through the combustion of natural gas, which will be converted into the mechanical energy required to drive the combustion turbine compressors and electric generators. Four LM technology CTGs have been selected for the project; these CTGs will be supplied by General Electric. This technology is the most efficient simple-cycle aeroderivative combustion turbine generator on the market and has a documented availability record of 97.8 percent. The construction and commissioning process for the CTGs will take approximately 4 to 6 months once the initial support infrastructure is in place, including the water and natural gas lines and electrical switchgear.

Each CTG system will consist of a CTG with supporting systems and associated auxiliary equipment. The CTGs will have water injection to control NO_x emissions and for power augmentation; CTG exhaust emissions will be further reduced through the use of selective catalytic reduction and oxidation catalyst systems.

The CTGs will be equipped with the following required accessories to provide safe and reliable operation:

- Inlet air chilling

- Inlet air filters
- Metal acoustical enclosure
- Single lube oil cooler
- Water injection
- Turbine vent fans
- Generator vent fans
- Fire detection and protection system, including a Diesel fire pump
- 750 kw emergency natural gas fired generator

Inlet combustion air will be cooled via a chilled water system and the combustion turbine will have water injection spray evaporative inter-cooling between the low pressure compressor and the high pressure compressor. NO_x suppression water injection will control NO_x emissions at the outlet of the CTG.

The exhaust stack transition will be equipped with an SCR emission control systems that will use ammonia vapor in the presence of a catalyst to further reduce the NO_x concentration in the exhaust gases. The catalyst module will be located between the CTG exhaust gas transition section and the exhaust stack base. Diluted ammonia vapor (NH_3) will be injected into the exhaust gas stream through a grid of nozzles located upstream of the catalyst module. The subsequent chemical reaction will reduce NO_x to nitrogen and water, resulting in a NO_x concentration of no more than 5 ppmvd at 15 percent oxygen (O_2) in the exhaust gas. The exhaust stack transition will also include an oxidation catalyst system, which will control CO and precursor organic compound emissions to 6 ppmvd. POC emissions will be less than 2 ppmvd, respectively. The oxidation catalyst system will be located between the CTG base and the SCR system.

2.2.5 Major Electrical Equipment and Systems

Until the initial operation of U.S. Dataport Super Hub server farm, the bulk of the electric power produced by the facility will be transmitted to the PG&E grid. Full build-out and occupancy of the server farm is expected to take several years to complete. Initial power requirements of the server farm will be relatively low during initial operation and will increase over time as space is leased-out and occupied. Some power will be used onsite to power auxiliaries such as pumps and fans, control systems, and general facility loads, including lighting, heating, and air conditioning. Some will also be converted from alternating current (AC) to direct current (DC) for use as backup power for control systems and for other uses. Transmission and auxiliary uses are discussed in the following subsections.

2.2.5.1 AC Power—Transmission

Four CTGs will generate power at 13.8 kV. An overall single-line diagram of the facility's electrical system is shown in Figure 2.2-5. The four 13.8-kV generator outputs will be connected by isolated phase bus to individual oil-filled generator step-up transformers, which will increase the voltage to 115-kV. Surge arresters will be provided at the high-voltage bushings to protect the transformers from surges on the 115-kV system caused by lightning strikes or other system disturbances. The transformers will be set on concrete pads within containment systems designed to contain the transformer oil in the event of a leak or spill. Fire protection systems will be provided. The high voltage side of each LECEF step-up transformer will be connected to PG&E's new Los Esteros 115 kV Substation via an open air 115-KV switchyard located on the LECEF site. The LECEF switchyard will be configured in a highly reliable scheme, as detailed in Section 5.0.

If the Los Esteros Substation is not completed in a timely manner, then one of the following two electrical interconnection alternatives, listed in order of preference, will be temporarily incorporated into the project's design:

- The more preferable alternative would be PG&E advancing the construction schedule of the Los Esteros-Montague circuit from the Los Esteros Substation to the inter-tie into the existing Nortech-Trimble 115 kV line located at the intersection of the Zanker Road and Highway 237.
- The less preferable alternative would be c*Power building a temporary wood pole line to the intersection of the Zanker Road and Highway 237, for a distance of approximately 2,000 feet.

2.2.5.2 AC Power—Distribution to Auxiliaries

Auxiliary power to the combustion turbine power block will be supplied at 4,160 volts AC by a double-ended 4,160-volt switchgear lineup. Primary power to the switchgear will be supplied by two oil-filled 115 to 4.16-kV station service stepdown transformers.

The 4,160-volt switchgear lineup will supply power to the CTG inlet chiller compressor motors, to the combustion turbine gas compressors, and to the load center (LC) transformers, rated 4,160 to 480 Volts for 480-volt power distribution.

2.2.5.3 DC Power Supply

Each CTG comes equipped with 125 VDC battery/charger systems for its package controls and its on-board fire protection system. 480 VAC will be provided from the associated motor control center (MCC) for that CTG.

One common DC power supply system consisting of one 125-volt DC battery, two 100 percent 125-volt DC full-capacity battery chargers, metering, ground detectors, and distribution panels will be supplied for balance-of-plant.

Under normal operating conditions, the battery chargers will supply DC power to the DC loads. The battery chargers will receive 480-volt, three-phase AC power from the AC power supply (480-volt) system and continuously charge the battery while supplying power to the DC loads. The ground detection scheme will detect grounds on the DC power supply system.

Under abnormal or emergency conditions, when power from the AC power supply (480-volt) system is unavailable, the battery supplies DC power to the DC loads. Recharging of a discharged battery will occur whenever 480-volt power becomes available from the AC power supply (480-volt) system. The rate of charge will depend on the characteristics of the battery, battery charger, and connected DC load during charging. The anticipated maximum recharge time will be 24 hours.

The 125-volt DC system will also be used to provide control power to the 4,160-volt switchgear, to the 480-volt LCs, and to critical control circuits.

2.2.5.4 Essential Service AC Uninterruptible Power Supply

The combustion turbine power block will also have an essential service 120-volt AC, single-phase, 60-Hz power source. This source will supply AC power to essential instrumentation, to critical equipment loads, and to unit protection and safety systems that require uninterruptible AC power. The essential service AC system and DC power supply system will be designed to ensure that critical safety and unit protection control circuits have power and can take the correct action on a unit trip or loss of plant AC power.

The essential service AC system will consist of one full-capacity inverter, a solid-state transfer switch, a manual bypass switch, an alternate source transformer and-voltage regulator, and an AC panelboard.

The normal source of power to the system will be the DC power supply system through the inverter to the panelboard. A solid-state static transfer switch will monitor the inverter output and the alternate AC source continuously. The transfer switch will automatically transfer essential AC loads without interruption from the inverter output to the alternate source upon loss of the inverter output.

A manual bypass switch will also be included to enable isolation of the inverter-static transfer switch for testing and maintenance without interruption to the essential service AC loads.

2.2.6 Fuel System

The CTGs will be designed to burn natural gas. Maximum natural gas requirements during operation are approximately 45,397 MMBtus/day (Higher Heating Value basis).

The pressure of natural gas delivered to the site via pipeline (see Section 6) is expected be 245 to 355 pounds per square inch gauge (psig). The natural gas will be pressurized by onsite compressors, as needed, and then flow through gas scrubber/filtering equipment, a gas pressure control station, and a flow metering station before entering the combustion turbines.

2.2.7 Recycled Water Supply and Use

This section describes the quantity of recycled water required, and the use of the recycled water supply.

2.2.7.1 Recycled Water Requirements

Recycled water consumption includes cooling tower make up for cooling from the following heat rejection sources: CTG lube oil system, fuel gas compressor cooling, recycle gas cooler, inlet air chiller condenser, and other minor sources. Additional make up water is fed to the water treatment system for use in NO_x suppression injection water and compressor evaporative inter-cooling. The project’s expected peak water consumption is about 566 gallons per minute (gpm) based on hot day full load operation. At this rate, total daily peak water use is about 820,000 gallons per day (gpd), based on 24 hours operation at sustained peak hourly temperature.

Generation of demineralized water quality is required to operate the CTG water treatment system and will include micro filtration, electrodialysis, reverse osmosis, and neutralization.

Demineralization and water filtration equipment will be provided in 4 skid-mounted units, one unit for each CTG.

2.2.7.2 Recycled Water Supply

Approximately 42 percent of the total water requirements for the project will be for water injection to control NO_x emissions. The balance of the water will be used in the cooling towers as makeup. The source for the water will be supplied by San Jose / Santa Clara WPCP via a 1,000-foot pipeline

2.2.7.3 Recycled Water Treatment

The recycled water from WPCP treated by microfiltration (MF) to lower the total suspended solids (TSS) content of the water supply. After MF, the water will be divided into supply for the cooling towers and supply for NO_x suppression injection. Cooling water treatment may require the addition of chemicals such as a pH control agent (acid or caustic), a mineral scale dispersant (i.e. polyacrylate polymer), a corrosion inhibitor (phosphate based), and a biocide (hypochlorite or equivalent). Although MF is not required treatment for the cooling tower makeup water, it is assumed that all the raw water will be microfiltered to conservatively estimate waste flows.

The treated recycled water to be used for NO_x suppression injection will continue to be treated to remove impurities. Microfiltration will be used as pretreatment prior to the reverse osmosis (RO) system, as a precaution to prevent downstream membrane fouling. MF filtrate will flow to a storage tank from which it will be pumped to the RO system.

The RO product, or permeate, is then fed to an electrodialysis (EDI) system to reduce any remaining ions to the required concentrations for feed into the turbine. Product water from the EDI system will be stored in product water storage tanks.

Discharges from the recycled water treatment processes will be sent to the WPCP via the wastewater discharge line.

2.2.8 Plant Cooling Systems

The heat rejection system will consist of a two-cell wet counter flow cooling tower to remove the heat generated by the turbine inlet chillers and the heat generated by miscellaneous auxiliary heat loads such as lube oil coolers and gas compression cooling. The cooling tower cells will utilize treated recycled water as makeup and will have a continuous blowdown to maintain basin dissolved solids in the range of 3 to 4 cycles of concentration.

2.2.9 Waste Management

Waste management is the process whereby all wastes produced at the plant will be collected, treated if necessary, and disposed of properly. Wastes will include waste lubricating oils and oily rags. Waste management is discussed in more detail in Section 8.13.

2.2.9.1 Solid Waste

The project will produce minimal maintenance and plant wastes typical of power generation operations. Maintenance will be performed by an outside contractor that will remove all generated wastes to the contractor’s establishment for ultimate disposal.

Generation plant wastes include oily rags, broken and rusted metal and machine parts, defective or broken electrical materials, empty containers, and other miscellaneous solid wastes, including the typical refuse generated by workers.

2.2.9.2 Hazardous Wastes

Several methods will be used to properly manage and dispose of hazardous wastes generated by the project. Waste lubricating oil will be recovered and recycled by a waste oil recycling contractor. Spent lubrication oil filters will be disposed of by the maintenance contractor in a Class I landfill. Spent SCR catalyst will be recycled by the supplier.

2.2.9.3 Waste Water Discharge

Waste water from the recycled water treatment process, cooling/process water blowdown, and sanitary sewer discharges will be sent to the WPCP via a 2,700-foot pipeline that will connect to either of the 60 or 80 inch sewer mains located on Zanker Road.

2.2.10 Management of Hazardous Materials

The project will not store any hazardous material other that those used in the electrical generation equipment. The project is not expected to warehouse spare lubricants or solvents.

A 19-30 percent solution of aqueous ammonia will be stored in a tank in a containment basin. Ammonia vapor detection equipment will be installed to detect escaping ammonia and activate alarms and the automatic vapor suppression features.

Portable safety showers and eyewashes will be provided adjacent to the ammonia storage tank area. State-approved personal protective equipment will be used by maintenance personnel during chemical spill containment and cleanup activities. Personnel will be properly trained in the handling of these chemicals and instructed in the procedures to follow in case of a chemical spill or accidental release. Adequate supplies of absorbent material will be stored onsite for spill cleanup.

Electric equipment insulating materials will be specified to be free of polychlorinated biphenyls (PCB).

A list of the chemicals anticipated for use at the LECEF is provided in Section 8.12, Hazardous Materials Handling. This table identifies each chemical by type and intended use and estimates the quantity to be stored onsite. Section 8.12 includes additional information on hazardous materials handling.

2.2.11 Emission Control and Monitoring

Air emissions from the combustion of natural gas in the CTGs will be controlled using state-of-the-art systems. Section 8.1, Air Quality, includes additional information on emission control and monitoring, which is summarized below.

2.2.11.1 NO_X Emission Control

Water injection and SCR will be used to control NO_x concentrations in the exhaust gas emitted to the atmosphere to 5 ppmvd at 15 percent oxygen from the gas turbines. The

SCR process will use aqueous ammonia. Ammonia slip, or the concentration of unreacted ammonia in the exiting exhaust gas, will be limited to 10 ppmvd at 15 percent oxygen. The SCR equipment will include a reactor chamber, catalyst modules, ammonia storage system, ammonia vaporization and injection system, and monitoring equipment and sensors.

2.2.11.2 CO and POC Emission Control

CO will be controlled at the CTG combustor with state-of-the-art combustion technology and the use of an oxidation catalyst system. POC emissions will be controlled through the use of advanced combustion controls.

2.2.11.3 Particulate Emission Control

Particulate emissions will be controlled using good combustion controls and natural gas as the sole fuel for the CTGs.

2.2.11.4 Continuous Emission Monitoring

A monitoring system will record fuel gas flow rate and monitor the emissions of NO_x, CO, and oxygen in the exhaust gas. This system will generate reports of emissions data in accordance with permit requirements and will send alarm signals to the off-site control room when the level of emissions approaches or exceeds pre-selected limits.

2.2.12 Plant Auxiliaries

The following systems will support, protect, and control the generating facility.

2.2.12.1 Lighting

The lighting system will provide maintenance personnel with illumination under normal conditions. As the generation equipment is located inside a metal enclosure with wide access doors, egress under emergency conditions will not require emergency lighting. The system also will provide 120-volt convenience outlets for portable lamps and tools.

2.2.12.2 Grounding

The electrical system will be susceptible to ground faults, lightning, and switching surges that can result in high voltage, constituting a hazard to site personnel and electrical equipment. The station grounding system will provide an adequate path to permit the dissipation of current created by these events.

2.2.12.3 Distributed Control and Information System

The Distributed Control and Information System (DCIS) will provide modulating control, digital control, monitoring, and indicating functions for the plant power block systems. The following functions will be provided:

- Controlling the CTGs and other systems in a coordinated manner
- Controlling the balance-of-plant systems in response to plant demands
- Monitoring controlled plant equipment and process parameters and delivering this information to plant operators

- Providing control displays (printed logs, cathode ray tube [CRT]) for signals generated within the system or received from input/output (I/O)
- Providing consolidated plant process status information through displays presented in a timely and meaningful way
- Providing alarms for out-of-limit parameters or parameter trends, displaying on alarm CRT(s), and recording on an alarm log printer
- Storing and retrieving historical data

The DCIS will be a redundant microprocessor-based system consisting of the following major components:

- CRT-based operator consoles
- Engineer work station
- Distributed processing units
- I/O cabinets
- Historical data unit
- Printers
- Data links to the combustion turbine and steam turbine control systems

2.2.12.4 Cathodic Protection

The cathodic protection system will be designed to control the electrochemical corrosion of designated metal piping buried in the soil. Depending upon the corrosion potential and the site soils, either passive or impressed current cathodic protection will be provided.

2.2.13 Interconnect to Electrical Grid

The four CTGs will be connected to a 3-phase step-up transformer, which will be connected to the plant's 115-kV switchyard. The switchyard will consist of an open air switchyard arranged in the highly reliable scheme with appropriate disconnect switches, circuit breakers and grounding switches. From the switchyard, the generated power will be transmitted into the new PG&E Los Esteros 115-kV substation via underground 115 KV cables. See Section 5.0 for additional information on the switchyard, and connection to PG&E transmission system.

If the Los Esteros Substation is not completed in a timely manner, then one of the following two electrical interconnection alternatives, listed in order of preference, will be temporarily incorporated into the project's design:

- The more preferable alternative would be PG&E advancing the construction schedule of the Los Esteros-Montague circuit from the Los Esteros Substation to the inter-tie into the existing Nortech-Trimble 115 kV line located at the intersection of the Zanker Road and Highway 237.
- The less preferable alternative would be c*Power building a temporary wood pole line to the intersection of the Zanker Road and Highway 237, for a distance of approximately 2,000 feet.

2.2.14 Project Construction

Construction of the generating facility, from site preparation and grading to commercial operation, is expected to take approximately 4 to 6 months. Major milestones are listed in Table 2.2-1.

TABLE 2.2-1
Project Schedule Major Milestones

Activity	Date
Begin Construction	December 2001
Startup and Test	April 2002
Commercial Operation	May 2002

The site will be accessed for construction via the PG&E constructed substation access road. Laydown for the project will be on applicant owned property.

The workforce on the project during construction will be approximately 287, including construction craft persons and supervisory, support, and construction management personnel (see Section 8.8, Socioeconomics).

Construction will be scheduled between 6 a.m. and 6 p.m., Monday through Saturday. However, due to the accelerated schedule and urgency to place this plant into operation for May 2002 peaking reliability, 24 hour per day, around the clock shift work may be required. During the startup phase of the project, some activities will continue 24 hours per day, 7 days per week. Materials and equipment will be delivered by truck.

2.2.15 Facility Operation

The Applicant intends that this facility operate to export electric power for 24 hours per day, 7 days per week, year round; per the terms and conditions of the power purchase agreement between the applicant and the California Department of Water Resources.

2.3 Facility Safety Design

The facility will be designed to maximize safe operation. Hazards that could affect the facility include earthquake, flood, and fire.

2.3.1 Natural Hazards

The principal natural hazards associated with the site are earthquakes and floods. The site is located in Seismic Risk Zone 4. Structures will be designed to meet the seismic requirements of the California Code of Regulations (CCR) Title 24 and the 1998 Uniform Building Code (UBC). Section 8.15, Geologic Hazards and Resources, discusses the geological hazards of the area and site. This section includes a review of potential geologic hazards, seismic ground motions, and the potential for soil liquefaction due to ground shaking. Appendix 10 includes the structural seismic design criteria for the buildings and equipment.

The site is essentially flat, with an average elevation of approximately 14 feet above mean sea level (MSL). The plant facilities will be at 14 feet MSL. According to the Federal Emergency Management Agency (FEMA), the site is not within either the 100- or 500-year floodplain. Section 8.14, Water Resources, includes additional information on the potential for flooding.

2.3.2 Emergency Systems and Safety Precautions

This section discusses the fire protection systems and safety precautions to be used by project personnel. Section 8.7, Worker Health and Safety, includes additional information on safety for workers. Appendix 10 contains the design practices and codes applicable to safety design for the project. Compliance with these requirements will minimize project effects on public and employee safety.

2.3.2.1 Fire Protection Systems

The project will rely on both onsite fire protection systems and local fire protection services.

Onsite Fire Protection Systems—The fire protection systems will be designed to protect personnel and limit property loss and plant downtime from fire or explosion. The project will have the following fire protection systems.

FM 200 Fire Protection System—This system will protect the turbine, generator, and accessory equipment compartments from fire. The system will have fire detection sensors in all compartments. Actuating one sensor will provide a high temperature alarm on the combustion turbine control panel. Actuating a second sensor will trip the combustion turbine, turn off ventilation, close ventilation openings, and automatically release the FM 200. The FM 200 will be discharged at a design concentration adequate to extinguish the fire.

Local Fire Protection Services—In the event of a major fire, plant personnel will be able to call upon the City of San Jose Fire Department for assistance. The Hazardous Materials Risk Management Plan (see Section 8.12, Hazardous Materials Handling) for the plant will include all information necessary to permit all firefighting and other emergency response agencies to plan and implement safe responses to fires, spills, and other emergencies.

2.3.2.2 Personnel Safety Program

The project will operate in compliance with federal and state occupational safety and health program requirements. Compliance with these programs will minimize project effects on employee safety. These programs are described in Section 8.7, Worker Health and Safety.

2.4 Facility Reliability

This section discusses the expected plant availability, equipment redundancy, fuel availability, water availability, and project quality control measures.

2.4.1 Plant Availability

The Applicant intends that this facility operate to export electric power for 24 hours per day, 7 days per week, year round; except as required for planned maintenance.

2.4.2 Redundancy of Critical Components

The following subsections identify equipment redundancy as it applies to project availability. Specifically, redundancy in the power block are described. The power block will be served by the following balance-of-plant systems: DCIS, demineralized water system, and closed cycle cooling water system. Redundancy following final design may differ.

2.4.2.1 Power Block

Four separate combustion turbine power generation trains will operate in parallel within the power block. Each train will be powered by a combustion turbine. Each combustion turbine will provide approximately 25 percent of the total power block output. The power block comprises the major components described below.

2.4.2.1.1 CTG Subsystems

The combustion turbine subsystems will include the combustion turbine, inlet air filtration and inlet chilling system, generator and excitation systems, and turbine control and instrumentation. The combustion turbine will produce thermal energy through the combustion of natural gas; the thermal energy will be converted into mechanical energy through rotation of the combustion turbine, which drives the compressor and generator. The CTG generators will be totally enclosed and open air cooled. The generator excitation system will be a solid-state static system. Combustion turbine control and instrumentation (interfaced with the DCIS) will cover the turbine governing system, the protective system, and sequence logic.

2.4.2.2 DCIS

The DCIS will provide the following control, monitoring, and alarm functions for plant systems and equipment:

- Control the CTG and other systems in response to unit load demands (coordinated control)
- Provide control room operator interface
- Monitor plant equipment and process parameters and provide this information to the plant operators in a meaningful format
- Provide visual and audible alarms for abnormal events based on field signals or software generated signals from plant systems, processes, or equipment

2.4.2.3 Demineralized Water System

Water for the demineralized water system will be provided from recycled water. The demineralized water system will consist of a trailer mounted mixed bed demineralizer system. Demineralized water will be stored in a suitable water tank.

2.4.2.4 Closed Cooling Water System

The closed cooling water system transfers heat from various plant equipment heat exchangers to the circulating water system through the cooling water heat exchangers.

Major components of this subsystem are motor-driven, centrifugal pumps and a cooling water heat exchanger.

2.4.3 Fuel Availability

Fuel will be delivered by PG&E from its existing pipelines 101 and 109 located 550 feet south of the facility on applicant property. Capacity through each line and through the main line is sufficient to supply the project. Because the project is not designed for a backup fuel supply, it would be shut down in the event natural gas service were interrupted to both lines.

2.4.4 Recycled Water Availability

The only source of process water for the project will be recycled water from the San Jose/Santa Clara WPCP. Potable water will be supplied by truck and stored onsite. The availability of water to meet the needs of the project is discussed in more detail in Section 7, Water Supply, and Section 8.14, Water Resources.

2.4.5 Project Quality Control

The objective of the Quality Control Program will be to ensure that all systems and components have the appropriate quality measures applied during design, procurement, fabrication, construction, and operation. The goal of the Quality Control Program is to achieve the desired levels of safety, reliability, availability, operability, constructibility, and maintainability for the generation of electricity.

Assurance of the quality required for a system is obtained by applying appropriate controls to various activities. For example, the appropriate controls for design work are checking and review, and the appropriate controls for manufacturing and construction are inspection and testing. Appropriate controls will be applied to each of the various project activities.

2.4.5.1 Project Stages

For quality assurance planning purposes, project activities have been divided into the following nine stages:

Conceptual Design Criteria—Activities such as the definition of requirements and engineering analyses.

Detail Design—Activities such as the preparation of calculations, drawings, and lists needed to describe, illustrate, or define systems, structures, or components.

Procurement Specification Preparation—Activities necessary to compile and document the contractual, technical, and quality provisions for procurement specifications for plant systems, components, or services.

Manufacturer Control and Surveillance—Activities necessary to ensure that the manufacturers conform to the provisions of the procurement specifications.

Manufacturer Data Review—Activities required to review manufacturers' drawings, data, instructions, procedures, plans, and other documents to ensure coordination of plant systems and components and conformance to procurement specifications.

Receipt Inspection—Inspection and review of products upon delivery to the construction site.

Construction/Installation—Inspection and review of storage, installation, and cleaning and initial testing of systems or components at the plant site.

System/Component Testing—Actual controlled operation of electrical generating components in a system to ensure that the performance of systems and components conforms to specified requirements.

Plant Operation—Actual operation of the energy facility system as the project progresses, the design, procurement, fabrication, erection, and checkout of each plant system will progress through the nine stages defined above.

2.4.5.2 Quality Control Records

The following quality control records will be maintained for review and reference:

- Project instructions manual
- Design calculations
- Project design manual
- Quality assurance audit reports
- Conformance to construction records drawings
- Procurement specifications (contract issue and change orders)
- Purchase orders and change orders
- Project correspondence

For procured component purchase orders, a list of qualified suppliers and subcontractors will be developed. Before contracts are awarded, the subcontractors' capabilities will be evaluated. The evaluation will include consideration of suppliers' and subcontractors' personnel, production capability, past performance, and quality assurance program.

During construction, field activities will be accomplished during the last four stages of the project: receipt inspection, construction / installation, system / component testing, and plant operation. The construction contractor will be contractually responsible for performing the work in accordance with the quality requirements specified by contract.

The subcontractors' quality compliance will be surveyed through inspections, audits, and the administration of independent testing contracts.

A plant O&M program typical for a project of this size will be implemented by the maintenance contractor to control O&M quality. A specific program for this project will be defined and implemented during initial plant startup.

2.5 Laws, Ordinances, Regulations, and Standards

The applicable LORS for each engineering discipline are discussed in Section 10, Engineering, and included as part of the Engineering Appendices (Appendix 10).

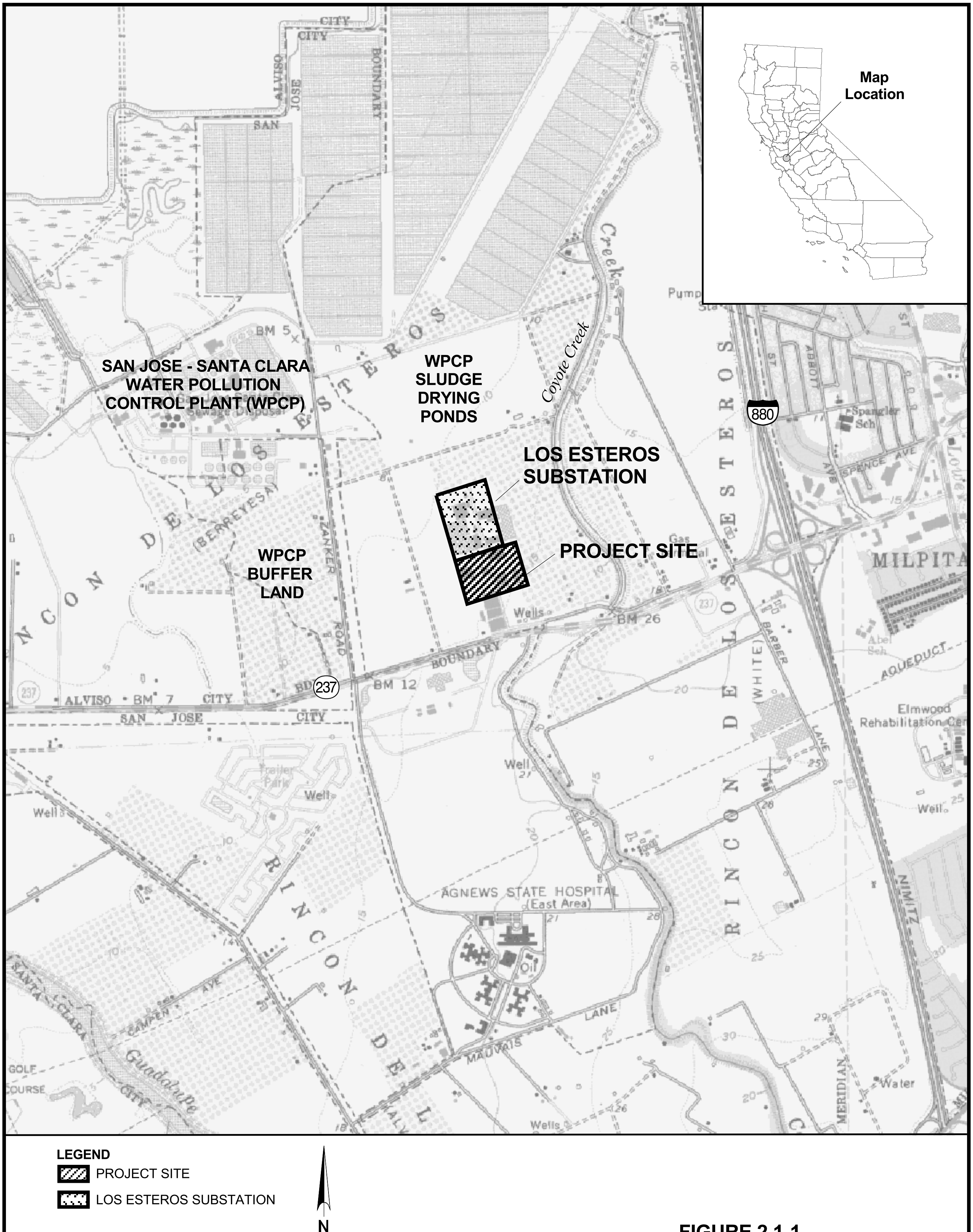

FIGURE 2.1-1
SITE LOCATION MAP

APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

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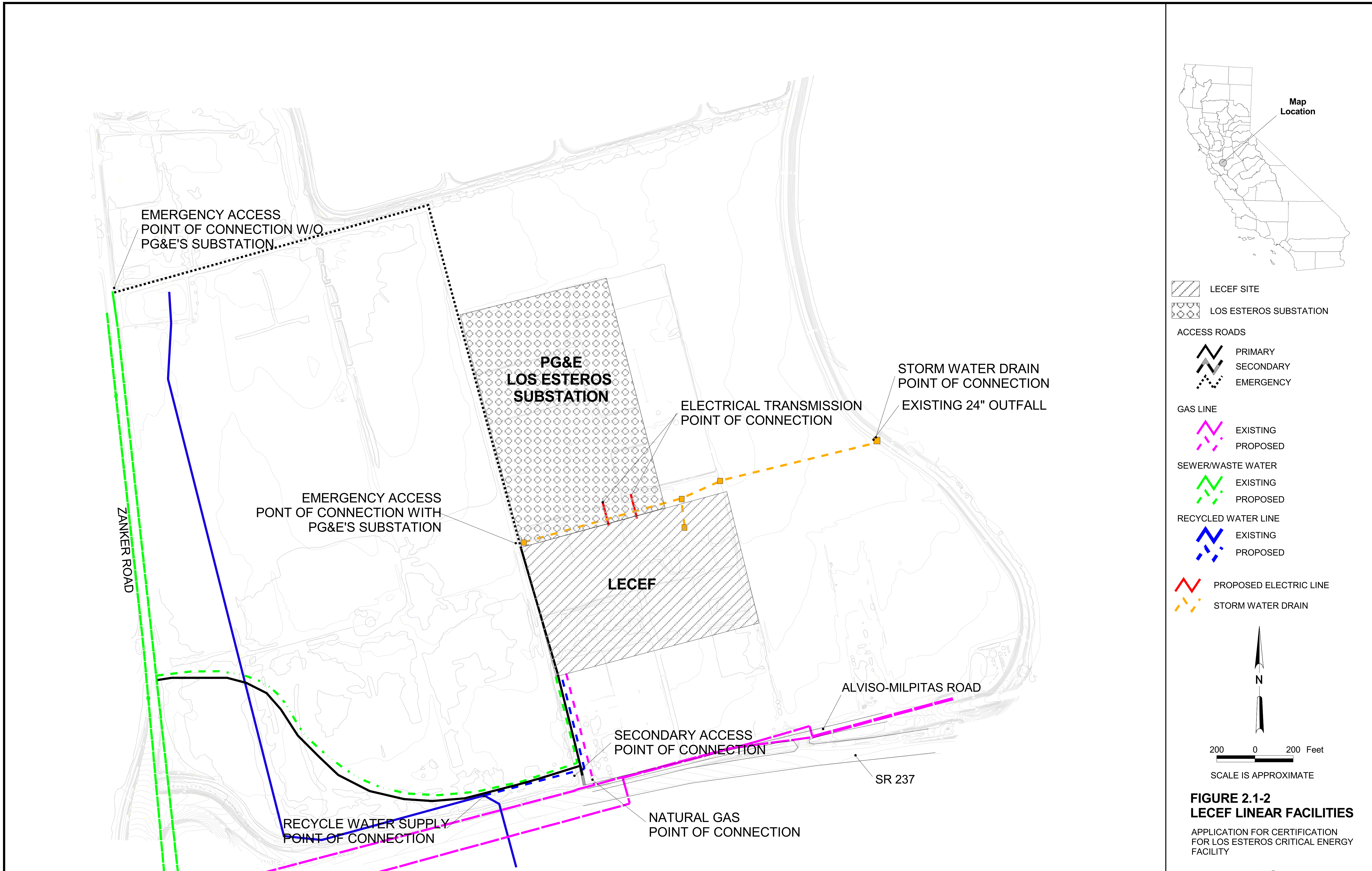

FIGURE 2.1-2
LECEF LINEAR FACILITIES

APPLICATION FOR CERTIFICATION
FOR LOS ESTEROS CRITICAL ENERGY
FACILITY

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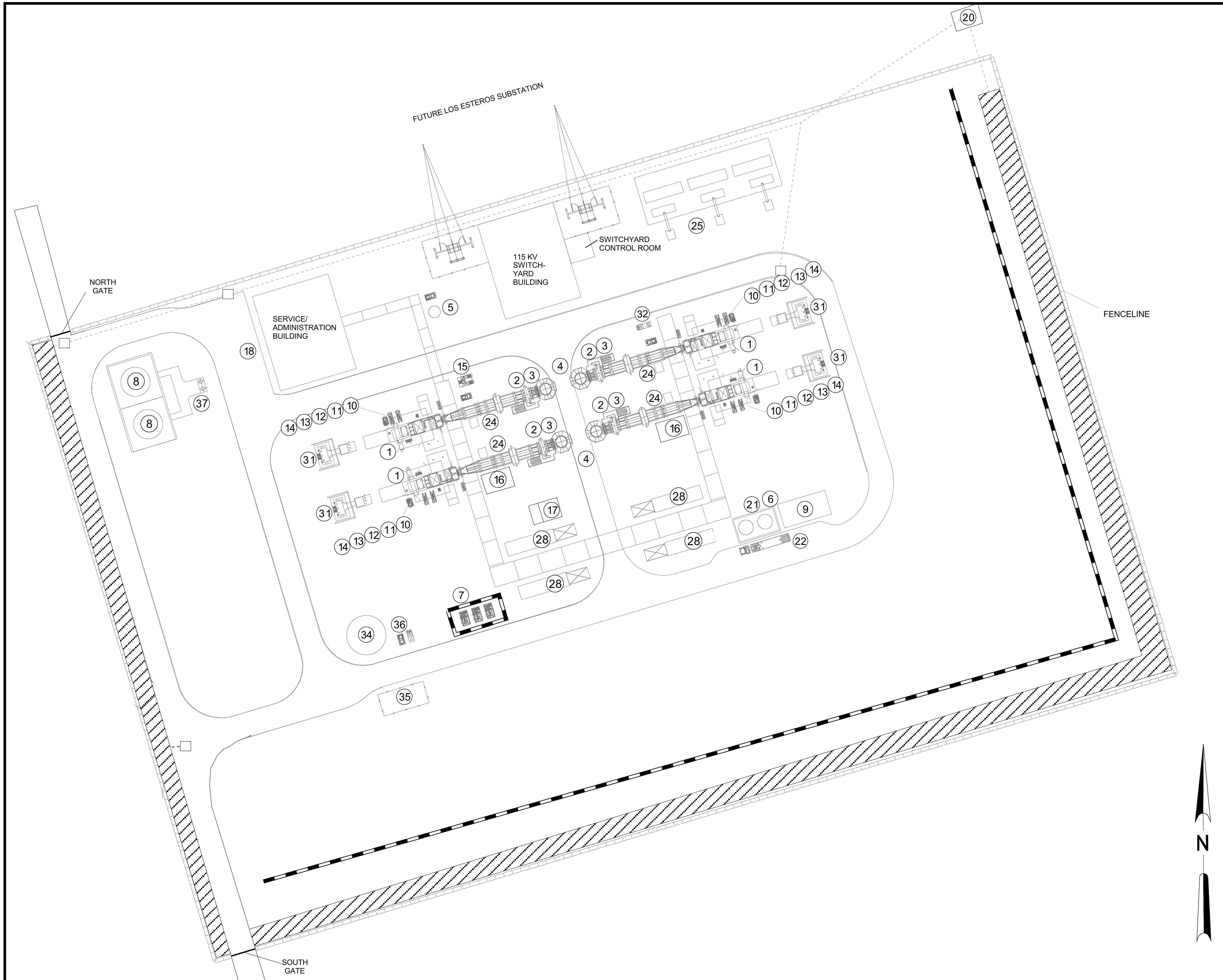

EQUIPMENT

ITEM NUMBER	DESCRIPTION
1	COMBUSTION TURBINE ENGINE
2	HRSG BOILER (DUCT ONLY)
3	SCR UNIT
4	EXHAUST STACK
5	POTABLE WATER TANK
6	FUTURE AMMONIA TANK
7	FUEL GAS COMPRESSOR
8	COOLING TOWER (2 CELLS)
9	LUBE OIL STORAGE
10	STARTING HYDRAULIC SKID
11	PERFORMANCE SKID
12	DEMIN. WTR. FILTER SKID
13	AUXILIARY WATER INJECTION PUMPS
14	GAS FUEL FILTER
15	AIR COMPRESSOR/AIR DRYER
16	OIL/WATER SEPARATOR AND WASH WATER DRAIN TANK
17	WASTE WATER SUMP
18	PARKING
19	STORMWATER CATCH BASIN
20	STORMWATER DISCHARGE SUMP/PUMP
21	AMMONIA STORAGE TANK AND PUMP
22	AMMONIA TANK LOADING AREA
24	AMMONIA VAPORIZER SKID
25	SWITCHGEAR MEDIUM VOLTAGE
28	CTG CHILLER SKID
31	50 MVA TRANSFORMER
32	BLACK START GENERATOR
34	FIRE WATER TANK
35	FUEL GAS METERING
36	FIREWATER PRIMARY AND EMERGENCY PUMPS
37	AUXILIARY COOLING WATER PUMP

LEGEND

UNDERGROUND STORMWATER DRAIN LINE

SOUND WALLS

STORMWATER RETENTION AREA

100 0 100 Feet

1:1200

NOTE: Drawing is to scale. Width of the sound walls and the width of the retention area are not to scale.

FIGURE 2.2-1
PLANT SITE PLAN

APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

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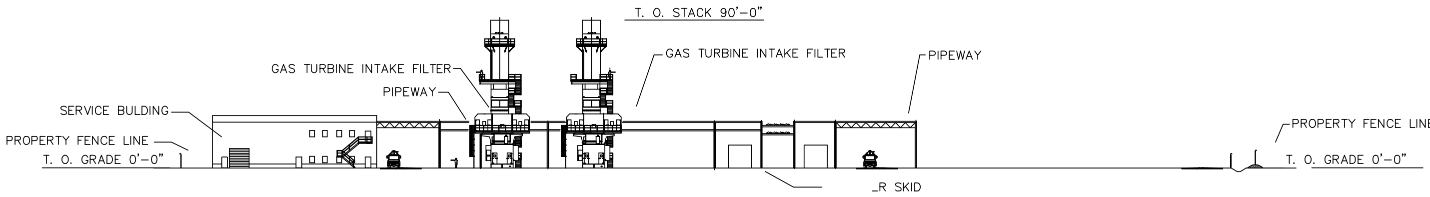
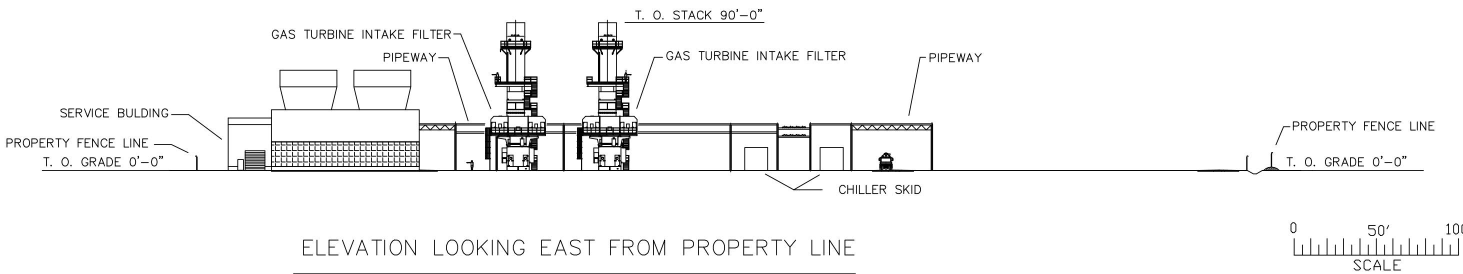
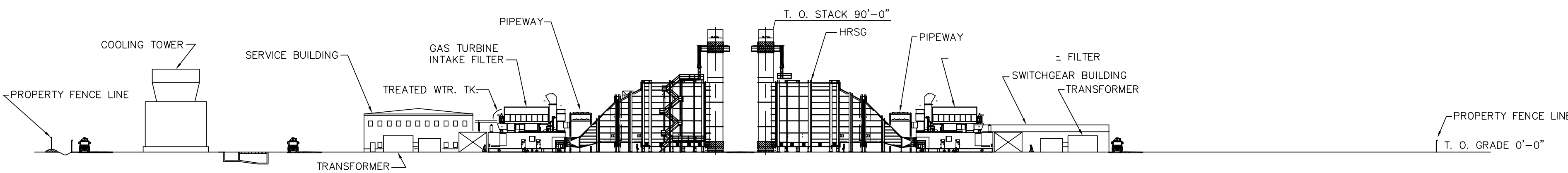


ELEVATION LOOKING EAST THROUGH TURBINES



ELEVATION LOOKING EAST FROM PROPERTY LINE



ELEVATION LOOKING NORTH THRU GAS TURBINES

FIGURE 2.2-2
PLANT ELEVATION - EAST / NORTH
APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

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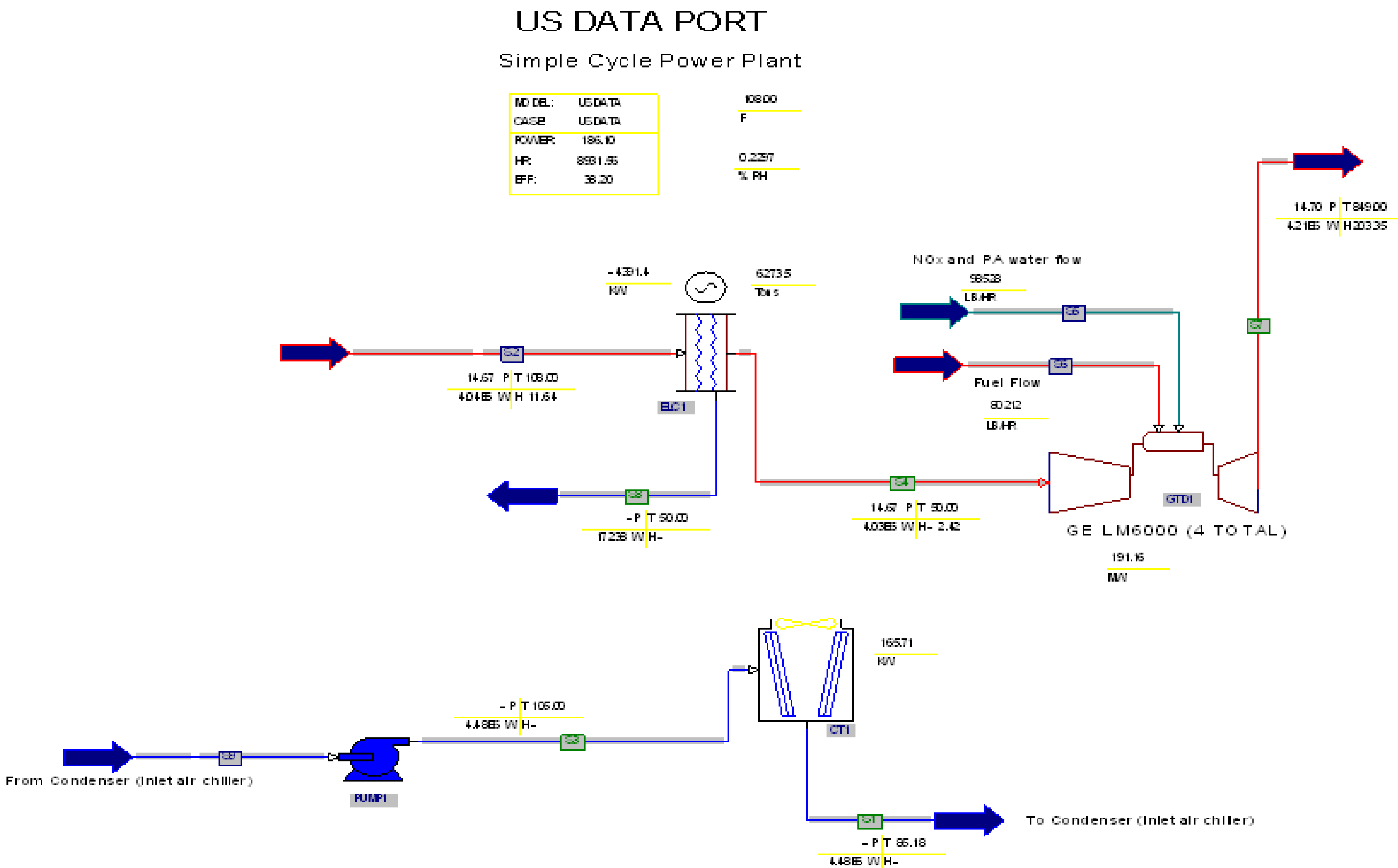

FIGURE 2.2-3
HEAT AND MASS BALANCE DIAGRAM
APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

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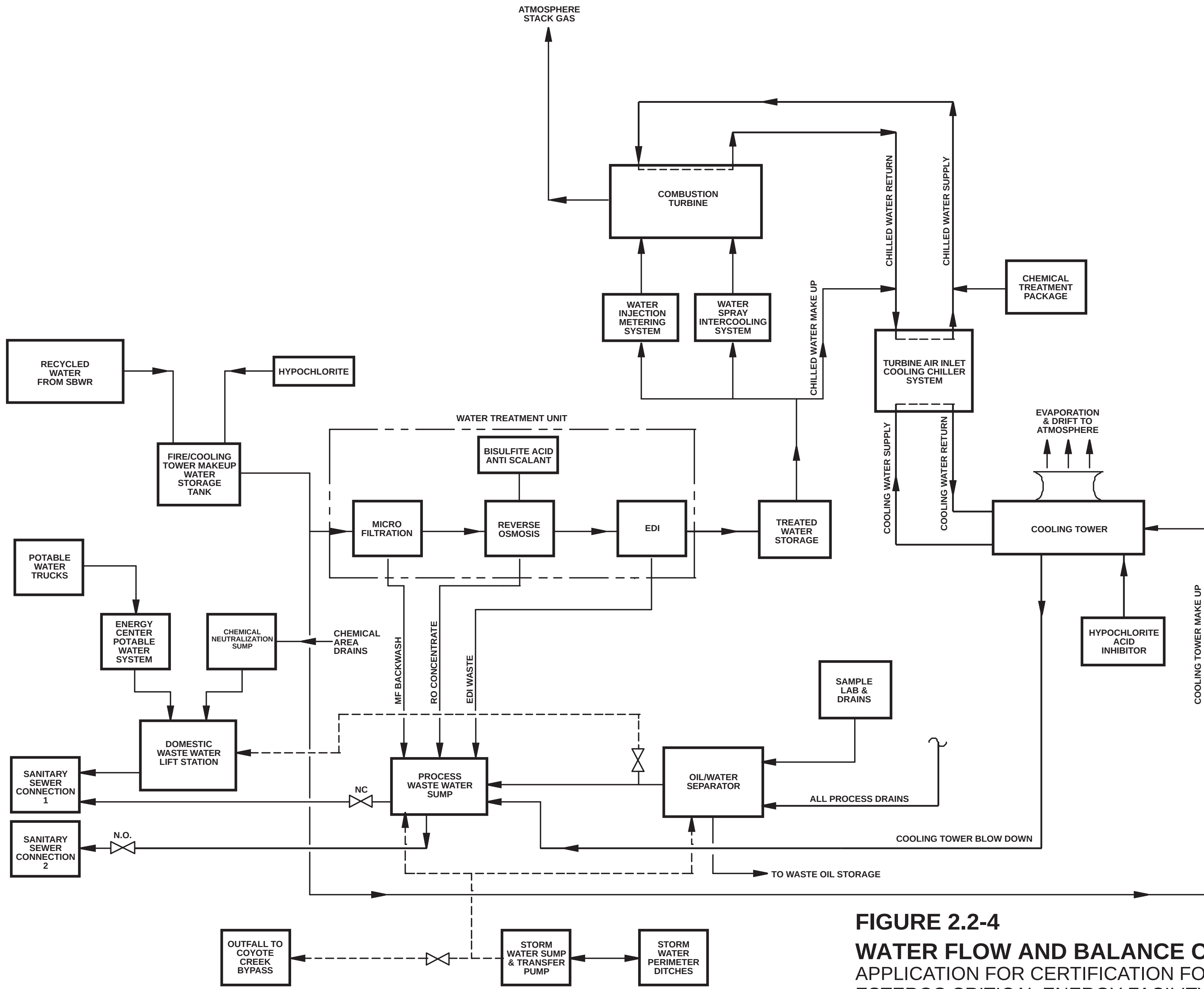

FIGURE 2.2-4
WATER FLOW AND BALANCE CHART
APPLICATION FOR CERTIFICATION FOR LOS ESTEROS CRITICAL ENERGY FACILITY

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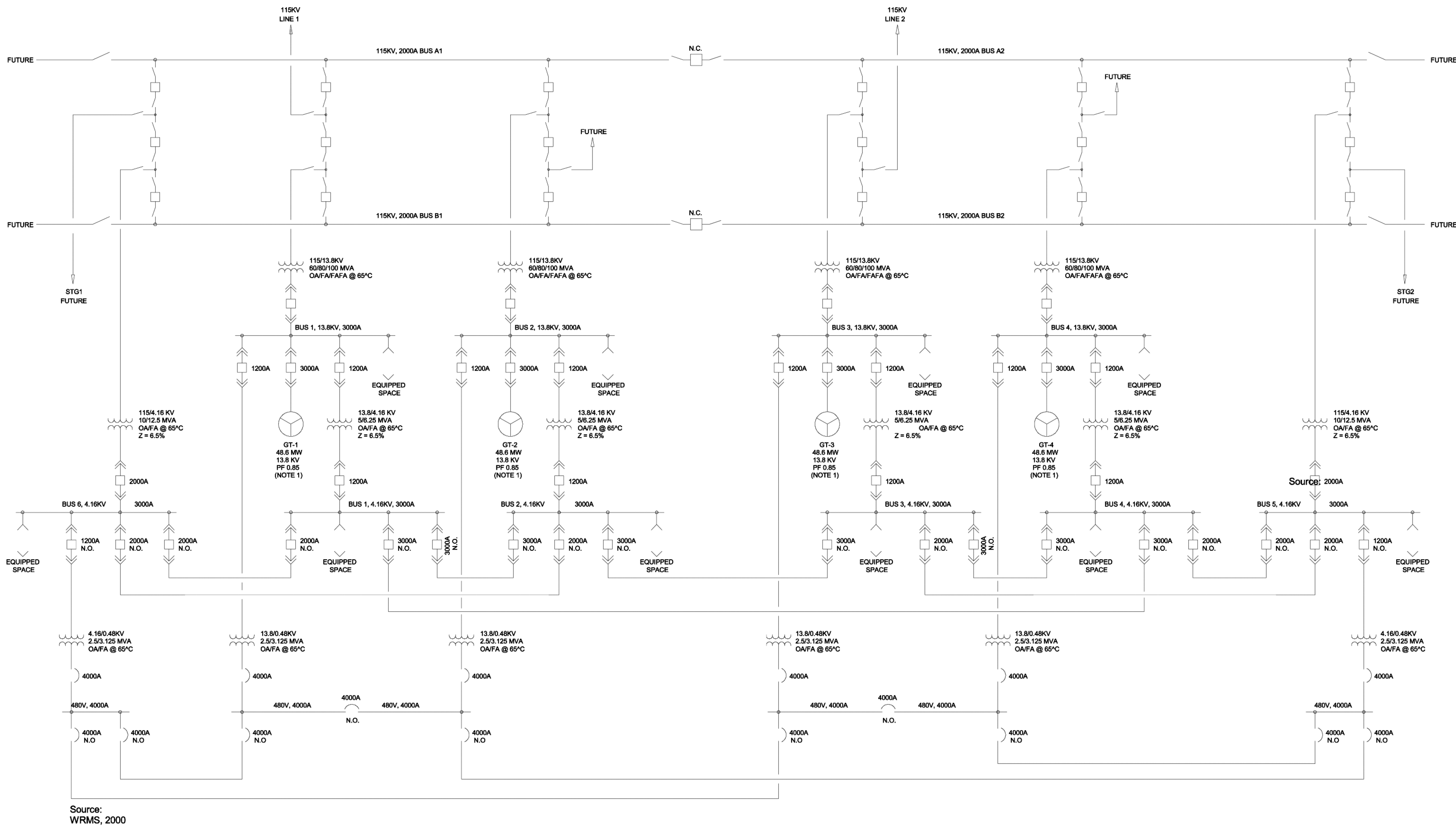

Source:
WRMS, 2000

D072001001RDD_22 (7/11/01)

FIGURE 2.2-5
230-kV AIS SWITCHYARD
SINGLE-LINE DIAGRAM
BREAKER AND ONE HALF SCHEME
APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

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SECTION 3

Demand Conformance

As of January 1, 2000 the Commission is no longer required to determine if a proposed project conforms with an integrated assessment of need. Senate Bill 110 took effect on January 1, 2000 (Cal. Const. Art. 4, Section 8.) states:

“Before the California electricity industry was restructured the regulated cost recovery framework for power plants justified requiring the commission to determine the need for new generation, and site only power plants for which need was established. Now that power plant owners are at risk to recover their investments, it is no longer appropriate to make this determination.”

SECTION 4

Facility Closure

Facility closure can be temporary or permanent. Temporary closure is defined as a shutdown for a period exceeding the time required for normal maintenance, including for overhaul or replacement of the combustion turbines. Causes for temporary closure include a disruption in the supply of natural gas or damage to the plant from earthquake, fire, storm, or other natural acts. Permanent closure is defined as a cessation in operations with no intent to restart operations owing to plant age, damage to the plant beyond repair, economic conditions, or other reasons. These two types of closure are discussed in the following sections.

4.1 Temporary Closure

For a temporary closure, where there is no release of hazardous materials, security of the facilities will be maintained on a 24-hour basis, and the CEC and other responsible agencies will be notified. Depending on the length of shutdown necessary, a contingency plan for the temporary cessation of operations will be implemented. The contingency plan will be conducted to assure conformance with all applicable LORS and the protection of public health and safety and the environment. The plan, depending on the expected duration of the shutdown, may include the draining of all chemicals from storage tanks and other equipment and the safe shutdown of all equipment. All wastes will be disposed of according to applicable LORS, as discussed in Section 8.13.

Where the temporary closure includes damage to the facility, and there is a release or threatened release of acutely hazardous materials into the environment, procedures will be followed as set forth in a Risk Management Plan (RMP) to be developed as described in Section 8.12. Procedures will include methods to control releases, notification of applicable authorities and the public, emergency response, and training for plant personnel in responding to and controlling releases of hazardous materials. Once the immediate problem is solved, and the acutely hazardous materials release is contained and cleaned up, temporary closure will proceed as described above for a closure where there is no release of hazardous materials.

4.2 Permanent Closure

The planned life of the generation facility is 30 years. However, if the generation facility were still economically viable, it could be operated longer. It is also possible that the facility could become economically noncompetitive earlier than 30 years, forcing early decommissioning. Whenever the facility is closed, the closure procedure will follow a plan; that plan will be developed as described below.

The removal of the facility from service, or decommissioning, may range from "mothballing" to the removal of all equipment and appurtenant facilities, depending on conditions at the time. Because the conditions that would affect the decommissioning decision are largely unknown at this time, these conditions should be presented to the CEC, San Jose, and Santa Clara County when more information is available and the timing for decommissioning is more imminent.

To assure that public health and safety and the environment are protected during decommissioning, a decommissioning plan will be submitted to the CEC for approval prior to decommissioning. The plan will discuss the following:

- Proposed decommissioning activities for the facility and all appurtenant facilities constructed as part of the facility
- Conformance of the proposed decommissioning activities to all applicable LORS and local/regional plans
- Activities necessary to restore the site if the plan requires removal of all equipment and appurtenant facilities
- Decommissioning alternatives other than complete restoration
- Associated costs of the proposed decommissioning and the source of funds to pay for the decommissioning

In general, the decommissioning plan for the facility will attempt to maximize the recycling of all facility components. Unused chemicals will be sold back to the suppliers or other purchasers or users. All equipment containing chemicals will be drained and shut down to assure public health and safety and to protect the environment. All nonhazardous wastes will be collected and disposed of in appropriate landfills or waste collection facilities. All hazardous wastes will be disposed of according to all applicable LORS. The site will be secured 24 hours per day during the decommissioning activities.

SECTION 5

Electric Transmission

5.1 Introduction

This section discusses the transmission interconnection between the Los Esteros Critical Energy Facility (LECEF) and the existing electrical grid. This section also discusses the impacts the operation of the facility will have on the flow of electrical power in this region of California. Section 5.1 provides an introduction to this section. Section 5.2 discusses the existing electrical transmission system in the immediate vicinity of the LECEF. Section 5.3 discusses the proposed alternatives for electrical interconnection between the LECEF and the electrical grid and the preferred electrical transmission line interconnection method. The impacts of the electrical interconnection on the existing transmission grid are presented in Section 5.4. Section 5.5 focuses on potential nuisances (electric field, magnetic field, audible noise, and corona effects) and safety of the interconnection. Section 5.6 provides a description of applicable LORS. Section 5.7 provides a list of references used in preparing this section.

The site for the proposed LECEF is located in unincorporated Santa Clara County north of the city of San Jose. The site is approximately 1,000 feet north of California State Highway 237 and 2,000 feet east of Zanker Road. Pacific Gas and Electric Company (PG&E) owns and operates the high-voltage transmission lines in the vicinity of the proposed LECEF.

The LECEF site was selected, in part, for its proximity to PG&E's new Los Esteros Substation. This 230/115 kV substation is planned for operation by June 2002[1]. Figure 5.1-1 (attached in a separate map pocket at the end of this section) shows the proposed location of LECEF in relation to the Los Esteros Substation and the regional transmission facilities. The proximity of the plant to the substation will facilitate the use of short underground transmission line segments for the electrical interconnection.

The Los Esteros Substation will serve as a connecting point between the Newark and Metcalf Substations at 230 kV and between the Nortech, Trimble, and Montague Substations and the Agnew Generating Plant at 115 kV. The 115 kV lines are part of PG&E's Mission Trail operating region. This existing transmission network will deliver the power generated at the LECEF to the PG&E electric grid.

As described in Section 2.1, the LECEF project will be designed, permitted, built, and operated as a permanent facility in two phases. Phase I, which will consist of the four simple cycle combustion turbine generators, each with a nominal electric output of about 45 MW, is the current project as described in this 4-Month AFC. Phase II, which is currently being considered for future development and permitting, will be the conversion from simple cycle

[1] The project can be interconnected to the 115 kV substation whether or not the proposed 230 kV interconnection is complete. PG&E has committed to building the 115 kV substation to meet the project objectives. In any event, should PG&E fail to build the Los Esteros substation entirely, this project can loop into the existing Nortech to Trimble 115 kV line near the intersection of Zanker Road and SR237.

to combined cycle by adding heat recovery and steam turbine generators (STGs) resulting in a total nominal generation capacity of 260 MW or higher.

The examination of the local electric transmission system was based around existing and planned capacities and locations of transmission lines and substations in the area of the electrical interconnection. The examination was also based on a worst-case (maximum generation and minimum adjacent load) LECEF operational scenario. In particular, a nominal Phase II output of 300 MW of generation and zero (0) MW of Dataport and Los Esteros Substation load were modeled. The interconnection feasibility study included analysis of looping existing 115 kV electrical transmission lines into the proposed LECEF and of directly connecting the plant to the Los Esteros Substation, either at 115 kV or at 230 kV. Even if the construction of the 230 kV Newark - Los Esteros and Metcalf – Los Esteros lines is not completed prior to the construction of the LECEF, several existing 115 kV lines will have been connected to the Los Esteros Substation. A Phase II maximum nominal output of 300 MW can be transmitted across these 115 kV lines. For these reasons, system analyses concentrated only on interconnecting to Los Esteros Substation at 115 kV.

This proposed electrical transmission interconnection will connect the LECEF to PG&E’s grid by way of two underground 115 kV circuits between the LECEF’s new Air Insulated Substation (AIS) and the adjacent Los Esteros 115 kV switchyard (Figure 5.1-2). The alternative interconnection option of two short overhead connections was also identified. However, the proximity of the Los Esteros 115 kV switchyard to the LECEF project essentially negated the affect of any other conceptual interconnections with respect to their feasibility and any anticipated impact on the existing transmission system and power flows. Primary consideration in the analysis was given to the ability of the existing and planned transmission lines to carry the anticipated output of the LECEF. Additional aspects considered included environmental affects of building and maintaining any new overhead interconnecting transmission lines, ROW acquisition, engineering constraints, and costs. From these alternatives the preferred transmission line interconnection configuration and construction techniques were selected. Further analysis, based on the Interconnection Data Sheet (attached as Appendix 5.1A), and discussion of the preferred interconnection, its arrangement, and alternatives are found below in Sections 5.2 and 5.3.

5.2 Transmission Interconnection Engineering

This section discusses the existing transmission facilities in the vicinity of the LECEF project and other associated electrical facilities.

5.2.1 Existing Electrical Transmission Facilities

The proposed LECEF site is approximately 15 acres in size and will be located immediately south of PG&E’s planned Los Esteros Substation. The LECEF facility and Los Esteros Substation will be located on property owned by c*Power that is being annexed from the County of Santa Clara to the City of San Jose (Figure 5.1-1). The proposed LECEF site lies just north of State Route 237 and just east of Zanker Road (Figure 5.1-2).

An inventory and an assessment of the transmission facilities in the immediate geographic area of the LECEF project were conducted. The area transmission line assessment focused on the number of electrical transmission lines, the rating of each line, existing loads, and the ability of the existing transmission grid to safely and reliably transport the peak output proposed to be generated at the LECEF.

Based on PG&E's Annual Transmission Assessment 2002 Summer Peak Power Flow Base Case (2001 Series),[2] the portion of the north San Jose area that the LECEF might impact[3] has 2,390 MW of peak load and 30 MW of generation.[4] The area's transmission system consists of 230 kV and 115 kV transmission lines. These and other lines are shown on Figure 5.1-1. Typical 230 kV transmission line ratings for the area are between 323 and 956 MegaVolt Amperes (MVA) with the Los Esteros-Newark 230 kV line rated at 734 MVA and the Los Esteros to Metcalf 230 kV line rated at 637 MVA. Several of the area's 115 kV line are constructed with 715 Aluminum (AL) conductors. The ratings for the various 115 kV lines range from 140 to 280 MVA. Table 5.2-1 lists the ratings and conductor types for selected lines in the area of the Los Esteros Substation.

TABLE 5.2-1
Capabilities of Lines in the Vicinity of Los Esteros Substation

From	To	Ckt. No.	Description	Volt.	Normal Rate (MVA)	Emerg Rate (MVA)	Conductor
Los Esteros	Newark	1	Single-circuit	230	734	796	1113 ACSR
Los Esteros	Metcalf	1	Single-circuit	230	637	637	795 ACSR
Los Esteros	Nortech	1	Single-circuit	115	280	320	2-715 AL Bundled
Los Esteros	Trimble	1	Single-circuit	115	307	307	2-715 AL Bundled
Los Esteros	Montague	1	Single-circuit	115	307	307	2-715 AL Bundled
Los Esteros	Agnew	1	Single-circuit (radial)	115	140	160	715 AL
Newark	Montague	1	Single-circuit	115	183	210	1113 AL
Newark	Scott	1	Double-circuit	115	167	189	715 AL
Newark	Scott	2	Double-circuit	115	167	189	715 AL
Newark	Trimble	1	Single-circuit	115	140	159	715 AL
Newark	Kifer	1	Single-circuit	115	167	187	715 AL
Trimble	San Jose B	1	Single-circuit	115	140	184	715 AL
Kifer	FMC	2	Single-circuit	115	140	160	715 AL
Nortech	Kifer	1	Single-circuit	115	307	307	2-715 AL Bundled
Kifer	Scott	1	Singe-circuit	115	167	191	715 AL
Trimble	Montague	1	Single-circuit	115	307	307	2-715 AL Bundled
Newark	Metcalf	1	Double-circuit	115	228	228	477 SSAC
Newark	Metcalf	2	Double-circuit	115	228	228	477 SSAC

To evaluate the Los Esteros Substation for its ability to distribute the output from the LECEF, an approach called the "first contingency rated exit capability," or FCREC, was

[2] Power flow base case used by PG&E for the Generator Transmission Interconnection Study.

[3] PG&E San Jose and Silicon Valley Power zones used to approximate this area.

[4] Including Agnew Co-generation (running) and FMC CT (not running) as in the power flow case.

used. The evaluation is based around the 2002 summer peak case provided by PG&E. From this power flow case, an inventory of generation, load, and line capacities was developed for Los Esteros. This inventory served as a starting point for the FCREC method of evaluation. The objective of the evaluation was to find the rated exit capability for the Los Esteros Substation. To find the rated capability, the following three steps were undertaken:

1. Add the rating of all the non-radial lines exiting the substation;
2. Subtract the rating of all generators connected to the substation; and
3. Add the rating of loads served by the substation.

The sum of Steps 1, 2, and 3, above, yields a number called the "normal total rated exit capability," or NTREC, for the substation. The NTREC represents the maximum possible additional generation that can be accommodated at the location under the best of conditions. This is an optimistic number, but it can be refined easily using standard power-flow methodology.

The FCREC is the refined estimate of capacity. This number takes into account the most severe single contingency, or line outage. It provides a more realistic limit for added generation than does the NTREC found as a result of Steps 1, 2, and 3 above. To calculate the FCREC, or the final estimate of system capability, Steps 4 and 5 are applied to the process:

4. Find the line exiting the substation that has the highest rating; and
5. Subtract the rating of the line identified in Step 4.

The FCREC gives the maximum possible export that might be expected without necessitating system improvements. Detailed estimates of the system impact are outlined in a Generator Transmission Interconnection Study Report sponsored by the Applicant and conducted by PG&E. This report is included in Appendix 5.4A.

Initially, there will be no load and no generation connected directly to the Los Esteros Substation. However, the radial Los Esteros-Agnew 115 kV line connects the 29 MW Agnew Co-Generation Plant and the summer peak 64 MW River Oaks load to the Los Esteros Substation. Therefore, the NTREC for the substation including the Agnew line is 2,300 MVA. Subtracting the highest rated (734 MVA) rating of the Newark 230 kV line, the FCREC is 1,566 MVA. This is the maximum amount of generation that might be expected to be added to Los Esteros without necessitating system improvements. In addition, aside from the capability of the line exits at Los Esteros, there will also be substantial transformation capability. Initially there will be two 230/115 kV transformers rated at 420 MVA each. Ultimately, there will be a total of four 230/115 kV transformers rated at 420 MVA. Based on this abbreviated analysis, the addition of the maximum nominal 300 MW of new generation facilities at Los Esteros will result in minimal transmission impacts. And, the plant is expected to provide needed voltage support to the area and to substations serving major loads (Scott and Kifer Substations) that will be served, in part, from the new Los Esteros Substation. A more detailed estimate of system impacts (both benefits and detriments) is provided in the Generator Transmission Interconnection Study Report in Appendix 5.4A.

5.2.2 Proposed Transmission Interconnection System

The preferred interconnection between the proposed LECEF and Los Esteros Substation will consist of the following major facilities:

- A new 115 kV Air Insulated Substation (AIS) to be located on LECEF property adjacent the Los Esteros Substation (Figure 5.1-2) The AIS will consist of a highly reliable two bus, circuit breaker-and-a-half arrangement.
- Two new underground three-phase, single-circuit, solid-dielectric, copper-conductor lines connecting the LECEF's AIS to the adjacent Los Esteros Substation 115 kV Switchyard
- Accommodation by PG&E in the design and construction of the Los Esteros 115 kV switchyard to include three 115 kV circuit breakers in a breaker-and-a-half arrangement to make the 115 kV connections

As a result of the LECEF's physical proximity to the Los Esteros Substation site, the two transmission circuits will exit the switchyard underground and run to the northwest for approximately 400 feet where they will resurface and be connected to the 115 kV switchyard. Figure 5.2-1 shows the location of the preferred electrical interconnection arrangement. The two 115 kV line exits will be rated to allow for the removal of one of the circuits without limiting plant output. Since the interconnection will be contained entirely within the LECEF and Los Esteros fences, no additional right-of-way will be required.

5.2.2.1 Los Esteros Critical Energy Facility 115 kV Gas Insulated Switchgear Characteristics

The proposed LECEF switchyard will consist of an air insulated, highly reliable two bus, breaker-and-a-half arrangement of 115 kV gas-insulated circuit breakers, air insulated disconnect switches, controls, and protective relay systems (See Figure 2.2-2). An electrical one-line diagram of the proposed LECEF is shown on Figure 5.2-1. As depicted on Figure 5.2-1, each generator will be provided with an independent tie to the switchyard. Redundant power transformers will serve to start up the plant and provide power for the auxiliary loads within the LECEF facility. Power will be distributed via 4.16 kV and 0.48 kV switchgear. Auxiliary AC and DC power will be derived from 115/4.16 kV and 4.16/0.48 kV auxiliary power transformers and a station battery system, respectively.

5.2.2.2 Underground Line and 115 kV Interconnection Characteristics

The LECEF's 115 kV AIS will be connected to the Los Esteros 115 kV Switchyard by means of two (2) three-phase 115 kV underground circuits approximately 350 feet in length. An electrical one-line diagram of the proposed LECEF to Los Esteros interconnection appears on Figure 5.2-2. Each circuit will be comprised of two (2) solid-dielectric, 2500 kcmil, copper conductors per phase. Each cable will be installed in a separate underground conduit (See Figure 5.2-3). The conduit system will exit beneath the LECEF AIS, run northwest, and resurface (rise) within the Los Esteros 115 kV switchyard. Within the Los Esteros Substation, the 115 kV cables will be connected to existing 115 kV facilities (See Figure 5.2-4)

5.3 Proposed Transmission Interconnection Alternatives

This section describes alternatives to the preferred electrical transmission interconnection discussed in Section 5.2. Although several concepts for interconnection were generated in the initial development of the LECEF, almost all were rejected due to the proximity of the LECEF to the Los Esteros Substation, engineering feasibility, visual concerns, or cost. Only two of the initial options studied, Alternative A: Underground (the preferred alternative) and Alternative B: Overhead, remained practical alternatives.

Section 5.3.1 presents Alternative B: Overhead as a feasible alternative to the preferred method that is shown on Figure 5.1-2 and discussed throughout the environmental analysis. Section 5.3.2 discusses the additional initial options considered and rejected. Since these options no longer represent viable alternatives for LECEF, they are described as "potential alternatives" and are not discussed outside of this section.

5.3.1 Alternative B—Connecting to Los Esteros by two Overhead Circuits

This alternative has similar electrical elements as the preferred interconnection alternative, except that the two new 115 kV circuits exiting the LECEF AIS would remain above ground on the LECEF side of the fence and would be connected by short overhead spans into the Los Esteros 115 kV switchyard. The potential problem with this alternative is that there are likely to be clearance problems between these two new overhead circuits and one or more of the substation's four existing 115 kV circuits. These existing circuits will enter the substation at the southwest corner and cross in an easterly direction along the south end of the substation with an alignment immediately north of the LECEF. These four existing circuits and the two new circuits will all connect to the 115 kV bus. In order to eliminate any possible overhead clearance problems between the existing and new circuits, this alternative is not recommended.

5.3.2 Preliminary Alternative Transmission Interconnection Analysis

One of the results of the transmission resource analysis was the development of several additional conceptual transmission interconnection options. Factors considered in the development and selection of the preferred transmission interconnection alternative were: (a) the ability of the existing transmission resources to carry the power generated by the LECEF, (b) environmental consequences, (c) ability to secure any additional ROW (if needed), and (d) engineering considerations and constraints. This location offers few interconnection options that might be feasible.

However, potential alternatives were identified, analyzed, and only then discounted due to differences from the preferred transmission interconnection. These potential alternatives are presented below.

5.3.3 Potential Alternative 1 - Connection to Los Esteros 230 kV Switchyard

This alternative transmission interconnection consists of the following major elements:

- A new 230 kV breaker Air Insulated Switchyard located on the north end of the LECEF property adjacent the Los Esteros Substation

- Two new underground three-phase, single-circuit, solid-dielectric, copper-conductor lines extending approximately 400 feet from the LECEF's Air Insulated Substation (AIS) to the Los Esteros Substation 230 kV Switchyard.
- Modifications to the 230 kV bus and three additional 230 kV circuit breakers at Los Esteros Substation.

Potential Alternative 1 would involve exiting the generating facility site with two short 230 kV underground lines, running to the north beneath the 115 kV switchyard, and then connecting to the Los Esteros 230 kV bus. This alternative was not selected for two reasons. First, power flow models show that the Los Esteros Substation delivers more than 700 MVA of power across the four 115 kV lines to which it is connected. If the (maximum) 300 MW of power generated by the LECEF was to be connected at 230 kV, the power would just flow back through the Los Esteros Substation's, 230/115 kV transformers incurring additional power losses. Second, there are increased costs associated with 230 kV equipment compared with 115 kV equipment in the Los Esteros.

5.3.4 Potential Alternative 2 – Looping the Nortech - Los Esteros 115 kV Transmission Line into the LECEF AIS

Potential Alternative 2 involves looping the Nortech-Los Esteros 115 kV line into the LECEF where it passes by just before connecting to the Los Esteros 115 kV switchyard. The major elements of this alternative are:

- Two new, short (200-300 foot) overhead three-phase 115 kV transmission lines. The first of these short lines reconnects the Nortech line into the west side of the LECEF AIS. The second line connects the northwest side of the AIS to the Los Esteros 115 kV switchyard.

This alternative was rejected because of the convenience of interconnecting directly to the Los Esteros substation. Connection to the Los Esteros substation puts LECEF on a radial connection and insures that PG&E's electric power need not flow through the switchyard

5.3.5 Potential Alternative 3 – Looping the Trimble-Los Esteros 115 kV Transmission Line into the LECEF AIS

Potential Alternative 3 involves looping the Trimble-Los Esteros 115 kV line into the LECEF where it passes by just before connecting to the Los Esteros 115 kV switchyard. The major elements of this alternative are:

- Two new, short (200-300 foot) overhead three-phase 115 kV transmission lines. The first of these short lines connects the Trimble line into the west side of the LECEF AIS. The second line connects from the northwest side of the AIS to a circuit breaker at the Los Esteros 115 kV switchyard.

This alternative was rejected because of the convenience of interconnecting directly to the Los Esteros substation. Connection to the Los Esteros substation puts LECEF on a radial connection and insures that PG&E's electric power need not flow through the switchyard

Potential Alternative 4 – Looping the Montague-Los Esteros 115 kV Transmission Line into the LECEF AIS

Potential Alternative 3 involves looping the Montague-Los Esteros 115 kV line into the LECEF where it passes by just before connecting to the Los Esteros 115 kV switchyard. The major elements of this alternative are:

- Two new, short (200-300 foot) overhead three-phase 115 kV transmission lines. The first of these short lines connects the Montague line into the west side of the LECEF AIS. The second line connects from the northwest side of the AIS to a circuit breaker at the Los Esteros 115 kV switchyard.

This alternative was rejected because of the convenience of interconnecting directly to the Los Esteros substation. Connection to the Los Esteros substation puts LECEF on a radial connection and insures that PG&E's electric power need not flow through the switchyard

5.4 Transmission Interconnection Study

Interconnection studies include analysis of power flow, short circuit, and other factors to assess the impacts of the preferred transmission interconnection on the integrated transmission grid. The transmission interconnection study report for the LECEF project was prepared by PG&E. The Interconnection Data sheet submitted by the Applicant to PG&E is included in Appendix 5.1A. A copy of PG&E's study report is included as Appendix 5.4A.

5.5 Transmission Line Safety and Nuisances

This section discusses safety and nuisance issues associated with the preferred electrical interconnection for the LECEF. Construction and operation of the preferred overhead transmission line will be undertaken in a manner to ensure the safety of the public as well as maintenance and ROW crews while supplying power with minimal electrical interference.

5.5.1 Electrical Clearances

Typical high-voltage overhead transmission lines are composed of bare conductors connected to supporting structures by means of porcelain, glass, or plastic insulators. The air surrounding the energized conductor acts as the insulating medium. Maintaining sufficient clearances, or air space, around the conductors to protect the public and utility workers is paramount to safe operation of the line. The safety clearance required around the conductors is determined by normal operating voltages, conductor temperatures, short-term abnormal voltages, wind-blown swinging conductors, contamination of the insulators, clearances for workers, and clearances for public safety. Minimum clearances are specified in the National Electric Safety Code (NESC). Electric utilities, state regulators, and local ordinances may specify additional (more restrictive) clearances. Typically, clearances are specified for:

- Distance between the energized conductors themselves
- Distance between the energized conductors and the supporting structure

- Distance between the energized conductors and other power or communication wires on the same supporting structure, or between other power or communication wires above or below the conductors
- Distance from the energized conductors to the ground and features such as roadways, railroads, driveways, parking lots, navigable waterways, airports, etc.
- Distance from the energized conductors to buildings and signs
- Distance from the energized conductors to other parallel powerlines

The preferred LECEF transmission interconnection will be designed to meet all national, state, and local code clearance requirements. Since the designer must take into consideration many different situations, the generalized dimensions provided in the figures of this section should be regarded as reference for the electric and magnetic field calculations only and not absolute.

The minimum ground clearance for 115 kV transmission lines according to the NESC is 20.1 feet, based on the road-crossing minimum. This is the design clearance for the maximum operating temperature of the line. Under normal conditions, the line operates below maximum conductor temperature, and thus, the average clearance is greater than the minimum.

More in keeping with PG&E guidelines, we have chosen 24 feet as representative for making electrical effects calculations for the 115 kV. The final design value will be consistent with General Order 95 (GO-95) of the California Public Utilities Commission (CPUC), and PG&E's guidelines for electric and magnetic field (EMF) reduction.

5.5.2 Electrical Effects

The electrical effects of high-voltage transmission lines fall into two broad categories: corona effects and field effects. Corona is the ionization of the air that occurs at the surface of the energized conductor and suspension hardware due to very high electric field strength at the surface of the metal during certain conditions. Corona may result in radio and television reception interference, audible noise, light, and production of ozone. This study includes audible noise considerations only. Field effects are the voltages and currents that may be induced in nearby conducting objects. The transmission line's 60-Hz electric and magnetic fields cause these effects.

5.5.2.1 Electric and Magnetic Fields

Operating powerlines, like the energized components of electrical motors, home wiring, lighting, and all other electrical appliances, produce electric and magnetic fields, commonly referred to as EMF. The EMF produced by the alternating current electrical power system in the United States has a frequency of 60 Hz, meaning that the intensity and orientation of the field changes 60 times per second.

The 60-Hz powerline fields are considered to be extremely low frequency. Other common frequencies are AM radio, which operates up to 1,600,000 Hz (1,600 kHz); television, 890,000,000 Hz (890 MHz); cellular telephones, 900,000,000 Hz (900 MHz); microwave ovens, 2,450,000,000 Hz (2.4 GHz); and X-rays, about 1 billion (10^{18}) hertz. Higher frequency fields have shorter wavelengths and greater energy in the field. Microwave wavelengths are a few inches long and have enough energy to cause heating in conducting objects. Higher frequencies, such as X-rays, have enough energy to cause ionization (breaking of molecular bonds). At the 60-Hz frequency associated with electric power transmission, the electric and magnetic fields have a wavelength of 3,100 miles and have very low energy that does not cause heating or ionization. The 60-Hz fields do not radiate, unlike radio-frequency fields.

Electric fields around transmission lines are produced by electrical charges on the energized conductor. Electric field strength is directly proportional to the line's voltage; that is, increased voltage produces a stronger electric field. The electric field is inversely proportional to the distance from the conductors, so that the electric field strength declines as the distance from the conductor increases. The strength of the electric field is measured in units of kilovolts per meter (kV/m). The electric field around a transmission line remains practically steady and is not affected by the common daily and seasonal fluctuations in usage of electricity by customers.

Magnetic fields around transmission lines are produced by the level of current flow, measured in terms of amperes, through the conductors. The magnetic field strength also is directly proportional to the current; that is, increased amperes produce a stronger magnetic field. The magnetic field is inversely proportional to the distance from the conductors. Like the electric field, the magnetic field strength declines as the distance from the conductor increases. Magnetic fields are expressed in units of milliGauss (mG). The amperes and, therefore, the magnetic field around a transmission line fluctuate daily and seasonally as the usage of electricity varies.

Considerable research has been conducted over the last 30 years on the possible biological effects and human health effects from EMF. This research has produced many studies that offer no uniform conclusions about whether long-term exposure to EMF is harmful or not. In the absence of conclusive or evocative evidence, some states, California in particular, have chosen not to specify maximum acceptable levels of EMF. Instead, these states mandate a program of prudent avoidance whereby EMF exposure to the public would be minimized by encouraging electric utilities to use low-cost techniques to reduce the levels of EMF.

Additional information on EMF is provided in Appendix 5.5A.

5.5.2.2 Audible Noise

Corona is a function of the voltage of the line, the diameter of the conductor, and the condition of the conductor and suspension hardware. The electric field is directly related to the line voltage and is the greatest at the surface of the conductor.

Large-diameter conductors have lower electric field gradients at the conductor surface and, hence, lower corona than smaller conductors. Also, irregularities (such as nicks and scrapes on the conductor surface) or sharp edges on suspension hardware concentrate the electric field at these locations and, thus, increase corona at these spots. Similarly, contamination on the conductor surface, such as dust or insects, can cause irregularities that are a source for corona. Raindrops, snow, fog, and condensation are also sources of irregularities. Corona typically becomes a design concern for transmission lines having voltages of 345 kV and above.

The principle source of audible noise from electric transmission apparatuses is corona-associated noise from transmission lines and not substations, although, there is some noise associated with transformers. Corona noise is a function of line voltage and conductor size. Because the high-voltage transmission lines will already exist within and near Los Esteros Substation and the voltage and conductors will not be changed, the audible noise from them will not increase as a result of LECEF going on-line. With the proposed underground connections of the LECEF, the Los Esteros Substation will be affected only by adding circuit breakers to a 115 kV bus that will have been constructed to accommodate them. There is little noise associated with a circuit breaker unless it is operating (which occurs infrequently). The noise associated with the bus works is similar to that associated with a line. While the 115 kV bus will have been constructed larger to accommodate the additional breakers, the equipment will be similar to what already exists. This additional equipment will not be subject to an increase in voltage or, where applicable, a change in conductor size and therefore, will not generate any additional noise. While noise quantification by analytical methods is beyond normal engineering practice, we expect any additional noise generated to be masked by the existing sources.

5.5.2.3 EMF and Audible Noise Assumptions

It is important that any discussion of EMF and audible noise include the assumptions used to calculate these values and to remember that EMF and audible noise in the vicinity of the powerlines vary with regard to line design, line loading, distance from the line, and other factors.

The magnetic field is proportional to line loading (amperes), which varies as demand for electrical power varies and as generating facility generation is changed by the system operators to meet the changes in demand. Line-loading values assumed for the EMF studies were based on PG&E’s Annual Transmission Assessment 2002 Summer Peak Power Flow Base Case. The LECEF plant is assumed to be operating at 293 MW at a 0.85 power factor. At 115 kV, this power output is approximately 1,700 amps.

Both electric fields and audible noise depend upon line voltage and not the level of power flow. Because line voltage remains nearly constant for a transmission line during normal operation, the electric fields and audible noise associated with the 115 kV and 230 kV lines will be of the same magnitude after the generating facility as before. Power flow studies showed that 230 kV flows into the Los Esteros Substation from the Newark-Los Esteros and Metcalf-Los Esteros transmission lines will be *reduced* as a result of the power generated by the LECEF. Since 230 kV flows to the Los Esteros Substation will be reduced as a result of the new generating facility, magnetic fields will also be reduced. For these reasons, EMF and audible noise calculations were performed only for the 115 kV lines emanating from the Los Esteros Substation.

For the 115 kV lines a worst-case voltage of 121 kV (115 kV + 5 percent) was used in the EMF calculations The Los Esteros-Agnew 115 kV line is a radial line, thus loading on this line does not change as a result of the new generation. However, all four 115 kV lines exit the substation along the same path. Flows on the Los Esteros – Agnew line will contribute to the combined field and noise affects due to all four 115 kV lines.

The Los Esteros-Nortech, Los Esteros – Trimble, and Los Esteros – Montague 115 kV lines are all looped into the transmission system and the power will be carried away from the generating facility on these lines. A power flow study was conducted, as described in Section 5.5.2.3, EMF Calculations, to calculate how the power is expected to distribute over the outgoing circuits. The calculated power flow values are used in the EMF calculations and are tabulated in EMF Calculations.

Another important parameter for these studies is the phase arrangement of the lines, both existing and after the interconnection is made. The phasing (i.e., relative location of A, B, and C phases) on double-circuit structures may offer some field cancellation, which results in reduced magnetic field values at the ROW edge. Studies have shown that cross-phasing double-circuit lines provides magnetic field reduction when both circuits are carrying power in the same direction. In cross-phasing, the circuit on one side of the structure is configured, for example, with Phases A, B, and C arranged from top to bottom, while the other circuit is configured C, B, A from top to bottom. In this particular study, the existing lines already incorporate cross-phasing. Also, for purposes of calculating magnetic field, it is assumed in this study that the lowest clearance is 24 feet at mid-span for the 115 kV lines.

The data used for the EMF and audible noise studies can be noted from the discussions contained in the following paragraphs and the figures.

Figure 5.5-1 illustrates the plan view of the transmission systems and locations of the four cross sections (Locations A, B, C, and D) that were included in the EMF studies. The cross sections are viewed looking primarily north or west. Since loading on the Los Esteros-Agnew 115 kV line did not change as a result of the LECEF facility, EMF values calculated for Cross Section D were not expected to change but were included for completeness. The four 115 kV lines will exit the Los Esteros Substation heading approximately 2000' west to Zanker Road. These lines will then turn and run south along the east side of Zanker Road toward State Highway 237.

Figure 5.5-2 is Cross Section A, showing two double-circuit 115 kV pole line configurations along Zanker Road. The line on the far west, closest to Zanker Road, is the line to Nortech Substation. Then, from west to east, the remaining lines are Trimble, Montague, and Agnew. The cross-phasing configurations, conductor and shield wires used, and dimensions assumed for the EMF studies are pictured.

Cross Section B, as seen on Figure 5.5-3, shows the Los Esteros-Nortech 115 kV line as after it has turned west along State Highway 237. The cross-phasing configuration, conductor and shield wire, and dimensions assumed for the EMF studies are pictured.

Cross Section C is illustrated on Figure 5.5-4. This section consists of two 115 kV transmission lines on a common double-circuit pole line configuration. The line on the west side of the poles is the Los Esteros-Trimble line. The line on the east is the Los Esteros-Montague line. The assumed phasing, conductor and shield wire, and dimensions used for the EMF studies are pictured. Note that the conductors on the Los Esteros – Trimble Circuit are shown as having been rolled near the intersection of Zanker Road and State Highway 237 in an effort to minimize the field effects. North of State Highway 237, the Trimble Circuit is C-phase, A-phase, B-phase top-to-bottom. South of State Highway 237, the Trimble Circuit is A-phase, B-phase, C-phase top-to-bottom.

Cross Section D is illustrated on Figure 5.5-5. This section consists of the single-circuit radial Los Esteros -Agnew 115 kV transmission line.

EMF Calculations

EMFs were calculated at one meter above flat terrain using ENVIRO, a TL Workstation (TLW) program developed by the Electric Power Research Institute. Measurements for electric and magnetic fields at one meter above the ground surface is in accordance with the Institute of Electrical and Electronic Engineers (IEEE) standards. ENVIRO calculates the electric fields expressed as kV/m and the magnetic fields expressed in mG. The various inputs for the calculations include voltage, current load (amps), current angle (i.e., phasing), conductor type and spacing, number of subconductors, subconductor bundle symmetry, spatial coordinates of the conductors and shield wire, various labeling parameters, and other specifics. The field level is calculated perpendicular to the line and at mid-span where the overhead line sags closest to the ground (calculation point). The mid-span location, therefore, provides the maximum value for the field. Also using an ENVIRO mathematical model, audible noise is calculated at a 5-foot microphone height above flat terrain with information concerning rain, snow, and fog rates for daytime and nighttime hours as input. Audible noise is expressed in decibels. Graphs contained in this report and tables in Appendices 5.5B and 5.5C were produced by importing ENVIRO data into Microsoft Excel.

A power flow model was developed from a PG&E data set (2001 Annual Transmission Assessment for 2002 Summer Peak Power Flow Base Case). Two scenarios were calculated for comparison:

1. Without the proposed LECEF operating
2. With the proposed LECEF generation of 293 MW added

The variations in the power flow are tabulated in Table 5.5-1.

TABLE 5.5-1
Normal Power Flows for LECEF Study Cases - Peak Summer, 2002

		Without LECEF		With LECEF at 293 MW		
	Line	MVA	Current (Amps)	MVA	Current (Amps)	Percent Increase
230 kV	Los Esteros – Newark	287	-727 [a]	160	-403 [a]	-45
	Los Esteros – Metcalf	313	-792 [a]	286	-720 [a]	-9
115 kV	Los Esteros – Nortech	259	1241	311	1479	19
	Los Esteros – Trimble	174	836	214	1019	22
	Los Esteros – Montague	137	658	161	765	16
	Los Esteros – Agnew	47	224	47	224	0

[a]Negative values for current signify flows into Los Esteros; positive values represent flows from Los Esteros.

Results of EMF and Audible Noise Calculations

Electric Field and Audible Noise.

Line voltage and arrangement of the phases determine the electric field. The proposed configuration for the interconnection does not change either the voltage or the phasing of the existing 115 kV or 230 kV lines. Therefore, the electric fields in the vicinities of these

lines will remain the same. The analytical results of the electric field are shown in Appendix 5.5D. Graphical views are shown on Figures 5.5-5 through 5.5-8.
The highest levels of corona and, hence, audible noise will occur during inclement weather when the line conductors are wet. For these conditions, the conductor will produce a small amount of corona. However, no change in audible noise over the existing lines will occur since the conductor and voltages will remain the same as those of the existing system. The analytical results for the audible noise calculations are shown in Appendix 5.5C. Graphical views are shown on Figures 5.5-9 through 5.5-12.

The complete analytical results of the magnetic field calculations are provided in Appendix 5.5E and a graphical view is given on Figures 5.5-13 through 5.5-16. Table 5.5-2 summarizes calculated values for the magnetic field. The ± 30 feet from centerline coincides with the assumed edge of ROW for Cross Sections B and D and the ± 60 feet from the centerline coincides with the assumed edge of ROW for Cross Sections A and C. For each cross section the distance is given where the maximum field value was located.

TABLE 5.5-2
Magnetic Field Calculated Field at Mid-span Perpendicular to Transmission Centerline

System at Peak Load	Distance from Transmission Centerline (feet)				
			Location of Maximum Value Given Below		
Location A	**West of Centerline**			**East of Centerline**	
	-100	-30	-15	+30	+100
Without LECEF Plant	7.3	98.0	133.2	36.0	3.6
With LECEF Plant	8.5	116.4	160.0	44.9	4.7
Location B	**West of Centerline**			**East of Centerline**	
	-100	-60	-5	+60	+100
Without LECEF Plant	12.9	33.1	161.44	23.9	10.3
With LECEF Plant	15.4	39.4	192.4	28.5	10.4
Location C	**West of Centerline**			**East of Centerline**	
	-100	-30	-5	+30	+100
Without LECEF Plant	3.4	34.7	83.0	20.7	0.8
With LECEF Plant	3.5	43.5	101.1	23.8	1.0
Location D	**West of Centerline**			**East of Centerline**	
	-100	-60	-5	+60	+100
Without LECEF Plant	2.3	6.0	29.1	4.3	1.9
With LECEF Plant	2.3	6.0	29.1	4.3	1.9

Transmission Line EMF Reduction. While the State of California does not set a statutory limit for electric and magnetic field levels, the CPUC, which regulates electric transmission lines, mandates EMF reduction as a practicable design criterion for new and upgraded electrical facilities. As a result of this mandate, the regulated electric utilities, including PG&E, have developed their own design guidelines to reduce EMF at each new facility. The CEC, which regulates transmission lines to the point of connection, requires independent power producers (IPP) to follow the existing guidelines that are in use by local electric utilities or transmission-system owners.

In keeping with the goal of EMF reduction, the interconnection of the LECEF and Los Esteros Substation will be designed and constructed using the principles outlined in the PG&E publication, "Transmission Line EMF Guidelines." These guidelines explicitly incorporate the directives of the CPUC by developing design procedures compliant with Decision 93-11-013 and General Orders 95, 128, and 131-D. That is, when the towers, conductors, and ROWs are designed and routed according to the PG&E guidelines, the transmission line is consistent with the CPUC mandate.

From page 12 of the PG&E guidelines, the primary techniques for reducing EMF anywhere along the line are to:

1. Increase the distance between conductors and EMF sensors
2. Reduce the spacing between the line conductors
3. Minimize the current on the line
4. Optimize the configuration of the phases (A, B, C)

Anticipated EMF levels have been calculated for the LECEF interconnection as designed. The CEC requires actual measurements of pre-interconnection background EMF for comparison with measurements of post-interconnection EMF levels. If required, the pre- and post-interconnection verification measurements will be made consistent with IEEE guidelines and will provide sample readings of EMF at the edge of the ROW. Additional measurements will be made upon request for locations of particular concern.

Conclusion on EMF and Audible Noise. In conclusion, there is no change to the existing lines' electric field or audible noise levels as there is no change to the voltage or line configurations. There is a local increase, though, of magnetic field levels since there is an increase of current load. No changes to the existing lines are recommended as they already incorporate cross-phasing for reduced EMFs.

5.5.2.4 Induced Current and Voltages

A conducting object such as a vehicle or person in an electric field will have induced voltages and currents. The strength of the induced current will depend upon the electric field strength, the size and shape of the conducting object, and the object-to-ground resistance. Examples of measured induced currents in a 1 kV/m electric field are about 0.016 milliampers (mA) for a person, about 0.41 mA for a large school bus, and about 0.63 mA for a large trailer truck.

When a conducting object is isolated from the ground and a grounded person touches the object, a perceptible current or shock may occur as the current flows to ground. The amount of current depends upon the field strength, the size of the object, and the grounding resistance of the object and person. Shocks are classified as below perception, above perception, secondary, and primary. The mean perception level is 1.0 mA for a 180-pound man and 0.7 mA for a 120-pound woman. Secondary shocks cause no direct physiological harm, but may annoy a person and cause involuntary muscle contraction. The lower average secondary-shock level for an average-sized man is about 2 mA. Primary shocks can be harmful. Their lower level is described as the current at which 99.5 percent of subjects can still voluntarily "let go" of the shocking electrode. For the 180-pound man this is 9 mA; for the 120-pound woman, 6 mA; and for children, 5 mA. The NESC specifies 5 mA as the maximum allowable short-circuit current to ground from vehicles, trucks, and equipment near transmission lines.

The mitigation for hazardous and nuisance shocks is to ensure that metallic objects on or near the ROW are grounded and that sufficient clearances are provided at roadways and parking lots to keep electric fields at these locations sufficiently low to prevent vehicle short-circuit currents below 5 mA.

Magnetic fields can also induce voltages and currents in conducting objects. Typically, this requires a long metallic object, such as a wire fence or aboveground pipeline that is grounded at only one location. A person who closes an electrical loop by grounding the object at a different location will experience a shock similar to that described above for an ungrounded object. Mitigation for this is to ensure multiple grounds on fences or pipelines, especially those that are oriented parallel to the transmission line. This will be achieved by following local utility practice of grounding permanent metallic objects within transmission ROWs.

Where railroads are crossed or are parallel to the transmission line, coordination is required with the railroad company to ensure that the magnetically induced voltages and currents in the rails do not interfere with railroad signal and communications circuits, which often are transmitted through the rails.

The proposed 115 kV interconnection will be constructed in conformance with GO-95 and Title 8 CCR 2700 requirements. Therefore, hazardous shocks are unlikely to occur as a result of project construction or operation.

5.5.3 Aviation Safety

Federal Aviation Administration (FAA) Regulations, Part 77 establishes standards for determining obstructions in navigable airspace and sets forth requirements for notification of proposed construction. These regulations require FAA notification for any construction over 200 feet in height above ground level. Also, notification is required if the obstruction is more than specified heights and falls within any restricted airspace in the approach to airports. For airports with runways longer than 3,200 feet, the restricted space extends 20,000 feet (3.3 nautical miles) from the runway. For airports with runways 3,200 feet or less, the restricted space extends 10,000 feet (1.7 nautical miles). For heliports, the restricted space extends 5,000 feet (0.8 nautical mile). There will be no new electric transmission towers to trigger a review.

5.5.4 Fire Hazards

The 115 kV transmission interconnection will be designed, constructed, and maintained in accordance with GO-95, which establishes clearances from other man-made and natural structures to mitigate fire hazards.

5.6 Applicable Laws, Ordinances, Regulations, and Standards

This section provides a list of applicable LORS that apply to the preferred transmission line, substations, and engineering. The following compilation of LORS is in response to Section (h), of Appendix B attached to Article 6, of Chapter 5, of Title 20 of the California Code of Regulations. Inclusion of these data is further outlined in the CEC's publication entitled *Rules of Practice and Procedure & Generating Facility Site Certification Regulations.*

5.6.1 Design and Construction

Table 5.6-1 lists the applicable LORS for the design and construction of the Gas Insulated Substation and both the preferred underground transmission line and alternative overhead transmission line interconnections.

TABLE 5.6-1
Design and Construction Laws, Ordinances, and Standards Applicable to LECEF Electric Transmission

LORS	Applicability	AFC Conformance Section
General Order 128 (GO-128), CPUC, "Rules for Construction of Underground Electric Supply and Communication Systems"	CPUC rule covers required construction, clearances, maintenance, and inspection requirements.	Section 5.2.2.2
General Order 95 (GO-95), CPUC, "Rules for Overhead Electric Line Construction"	CPUC rule covers required clearances, grounding techniques, maintenance, and inspection requirements.	Section 5.2.2.1
Title 8 California Code of Regulations (CCR), Section 2700 et seq. "High Voltage Electrical Safety Orders"	Establishes essential requirements and minimum standards for installation, operation, and maintenance of electrical installation and equipment to provide practical safety and freedom from danger.	Section 5.2.2
General Order 52 (GO-52), CPUC, "Construction and Operation of Power and Communication Lines"	Applies to the design of facilities to provide or mitigate inductive interference.	Section 5.2.2.2 Section 5.5.2.1 Section 5.5.2.2 Section 5.5.2.3 Section 5.5.2.4
ANSI/IEEE 693 "IEEE Recommended Practices for Seismic Design of Substations"	Provides recommended design and construction practices.	Section 5.2.2.1
IEEE 1119 "IEEE Guide for Fence Safety Clearances in Electric-Supply Stations"	Provides recommended clearance practices to protect persons outside the facility from electric shock.	Section 5.2.2 Section 5.5.1
IEEE 998 "Direct Lightning Stroke Shielding of Substations"	Provides recommendations to protect electrical system from direct lightning strokes.	Section 5.2.2.1
IEEE 980 "Containment of Oil Spills for Substations"	Provides recommendations to prevent release of fluids into the environment.	Section 5.2.2.1
Suggested Practices for Raptor Protection on Powerlines, April 1996	Provided guidelines to avoid raptor collision or electrocution.	

5.6.2 Electric and Magnetic Fields

The applicable LORS pertaining to electric and magnetic field interference are tabulated in Table 5.6-2.

TABLE 5.6-2
Electric and Magnetic Field Laws, Ordinances, and Standards Applicable to LECEF Electric Transmission

LORS	Applicability	AFC Reference
Decision 93-11-013 of the CPUC	CPUC position on EMF reduction.	Section 5.5.2 Section 5.5.2.3.3
General Order 131-D (GO-131), CPUC, Rules for Planning and Construction of Electric Generation, Line, and Substation Facilities in California	CPUC construction-application requirements, including requirements related to EMF reduction.	Section 5.2.2 Section 5.5.1 Section 5.5.2
Pacific Gas & Electric Company, “Transmission Line EMF Design Guidelines”	Large local electric utility’s guidelines for EMF reduction through tower design, conductor configuration, circuit phasing, and load balancing. (In keeping with CPUC D.93-11-013 and GO-131)	Section 5.2.2.1 Section 5.5.2
ANSI/IEEE 644-1994 “Standard Procedures for Measurement of Power Frequency Electric and Magnetic Fields from AC Powerlines”	Standard procedure for measuring EMF from an electric line that is in service	Section 5.5.2

5.6.3 Hazardous Shock

Table 5.6-3 lists the LORS regarding hazardous shock protection for the project.

TABLE 5.6-3
Hazardous Shock Laws, Ordinances, and Standards Applicable to LECEF Electric Transmission

LORS	Applicability	AFC Reference
Title 8 CCR Section 2700 et seq. “High Voltage Electrical Safety Orders”	Establishes essential requirements and minimum standards for installation, operation, and maintenance of electrical equipment to provide practical safety and freedom from danger.	Section 5.2.2.1 Section 5.2.2.2 Section 5.5.1
ANSI/IEEE 80 “IEEE Guide for Safety in AC Substation Grounding”	Presents guidelines for ensuring safety through proper grounding of AC outdoor substations.	Section 5.2.2.1 Section 5.5.1
National Electrical Safety Code (NESC), ANSI C2, Section 9, Article 92, Paragraph E; Article 93, Paragraph C.	Covers grounding methods for electrical supply and communications facilities.	Section 5.2.2.1 Section 5.2.2.2 Section 5.5.2.1 Section 5.5.2.2

5.6.4 Communications Interference

The applicable LORS pertaining to communication interference are tabulated in Table 5.6-4.

TABLE 5.6-4
Communications Interference Laws, Ordinances, and Standards Applicable to LECEF Electric Transmission

LORS	Applicability	AFC Reference
Title 47 CFR Section 15.25, "Operating Requirements, Incidental Radiation"	Prohibits operations of any device emitting incidental radiation that causes interference to communications. The regulation also requires mitigation for any device that causes interference.	Section 5.2.2 Section 5.5.2.1 Section 5.5.2.2 Section 5.5.2.3.3 Section 5.5.2.4
General Order 52 (GO-52), CPUC	Covers all aspects of the construction, operation, and maintenance of power and communication lines and specifically applies to the prevention or mitigation of inductive interference.	Section 5.2.2 Section 5.2.2.1 Section 5.5.2.2 Section 5.5.2.4
CEC staff, Radio Interference and Television Interference (RI-TVI) Criteria (Kern River Cogeneration) Project 82-AFC-2, Final Decision, Compliance Plan 13-7	Prescribes the CEC's RI-TVI mitigation requirements, developed and adopted by the CEC in past siting cases.	Section 5.2.2.1 Section 5.2.2.2 Section 5.5.2.2

5.6.5 Aviation Safety

Table 5.6-5 lists the aviation safety LORS that may apply to the proposed construction and operation of the LECEF.

TABLE 5.6-5
Aviation Safety Laws, Ordinances, and Standards Applicable to LECEF Electric Transmission

LORS	Applicability	AFC Reference
Title 14 CFR Part 77 "Objects Affecting Navigable Airspace"	Describes the criteria used to determine whether a "Notice of Proposed Construction or Alteration" (NPCA, FAA Form 7460-1) is required for potential obstruction hazards.	Section 5.2.2 Section 5.5.3
FAA Advisory Circular No. 70/7460-1G, "Obstruction Marking and Lighting"	Describes the FAA standards for marking and lighting of obstructions as identified by Federal Aviation Regulations Part 77.	Section 5.2.2 Section 5.5.3
Public Utilities Code (PUC), Sections 21656-21660	Discusses the permit requirements for construction of possible obstructions in the vicinity of aircraft landing areas, in navigable airspace, and near the boundary of airports.	Section 5.2.2 Section 5.5.3

5.6.6 Fire Hazards

Table 5.6-6 tabulates the LORS governing fire hazard protection for the LECEF project.

TABLE 5.6-6
Fire Hazard Laws, Ordinances, and Standards Applicable to LECEF Electric Transmission

LORS	Applicability	AFC Reference
Title 14 CCR Sections 1250-1258, “Fire Prevention Standards for Electric Utilities”	Provides specific exemptions from electric pole and tower firebreak and electric conductor clearance standards, and specifies when and where standards apply.	Section 5.2.2.2 Section 5.5.4
ANSI/IEEE 80 “IEEE Guide for Safety in AC Substation Grounding”	Presents guidelines for ensuring safety through proper grounding of AC outdoor substations.	Section 5.2.2.1 Section 5.5.4
General Order 95 (GO-95), CPUC, “Rules for Overhead Electric Line Construction” Section 35	CPUC rule covers all aspects of design, construction, operation, and maintenance of electrical transmission line and fire safety (hazards).	Section 5.2.2 Section 5.5.4

5.6.7 Jurisdictional Agencies

Table 5.6-7 identifies national, state, and local agencies with jurisdiction to issue permits or approvals, conduct inspections, and / or enforce the above-referenced LORS. Table 5.6-7 also identifies the associated responsibilities of these agencies as they relate to the construction and operation of the Los Esteros Energy Center.

TABLE 5.6-7
Jurisdictional Agencies for LECEF Electric Transmission

Agency or Jurisdiction	Responsibility
CEC	Jurisdiction over new transmission lines associated with thermal generating facilities that are 50 MW or more. (PRC 25500)
CEC	Jurisdiction of lines out of a thermal generating facility to the interconnection point to the utility grid. (PRC 25107)
CEC	Jurisdiction over modifications of existing facilities that increase peak operating voltage or peak kilowatt capacity 25 percent. (PRC 25123)
CPUC	Regulates construction and operation of overhead transmission lines. (General Order No. 95) (those not regulated by the CEC)
CPUC	Regulates construction and operation of power and communications lines for the prevention of inductive interference. (General Order No. 52)
FAA	Establishes regulations for marking and lighting of obstructions in navigable airspace. (AC No. 70/7460-1G)
Local Electrical Inspector	Jurisdiction over safety inspection of electrical installations that connect to the supply of electricity. (NFPA 70)
Western Systems Coordinating Council (WSCC)	Establishes power supply design criteria to improve reliability of the power system.
California Independent System Operator (Cal-ISO)	Provides Final Interconnection Approval

TABLE 5.6-7
Jurisdictional Agencies for LECEF Electric Transmission

Agency or Jurisdiction	Responsibility
City of San Jose	Establishes and enforces zoning regulations for specific land uses. Issues variances in accordance with zoning ordinances.
	Issues and enforces certain ordinances and regulations concerning fire prevention.
County of Santa Clara	Establishes and enforces zoning regulations for specific land uses. Issues variances in accordance with zoning ordinances.
	Issues and enforces certain ordinances and regulations concerning fire prevention.

5.7 References

Overhead Conductor Manual, Southwire.

PG&E Interconnection Handbook, PG&E, December 15, 1998.

Electrical and Biological Effects of Transmission Lines, A Review, U.S. Department of Energy, Bonneville Power Administration, Portland, Oregon, June 1989.

Transmission Line Reference Book, 115-138 kV Compact Line Design, Electric Power Research Institute, Palo Alto, California, 1978.

Transmission Line Reference Book, 345 kV and Above, Electric Power Research Institute, Palo Alto, California, 1975.

Corona and Field Effects of AC Overhead Transmission Lines, Information for Decision Makers, IEEE Power Engineering Society, July 1985.

PG&E Federal Energy Regulatory Commission (FERC) Form 715, 2000.

2002 Summer Peak Power Flow Case provided by PG&E.

California Public Service Commission, General Order 128-Rules for Construction of Underground Electric Supply and Communications Systems.

California Public Service Commission, General Order 95-Rules for Overhead Electric Line Construction.

California Public Service Commission, General Order 52-Construction and Operation of Power and Communication Lines

California Public Service Commission, General Order 131D-Rules for Planning and Construction of Electric Generation, Line, and Substation Facilities.

California Public Service Commission, Decision 93-11-013.

National Electrical Safety Code, ANSI C2.

United States of America, 47CFR15.25-Operating Requirements, Incidental Radiation.

United States of America, 15CFR77-Objects Affecting Navigable Airspace.

United States of America, 14CFR1250-1258-Fire Prevention Standards for Electric Utilities.

Figure 5.1-1

Base Map Source: Sure!Maps Raster, USGS 7.5 minute topographic quadrangle maps.

Figure 5.1-1

Proposed Los Esteros Critical Energy Facility

*c*POWER*

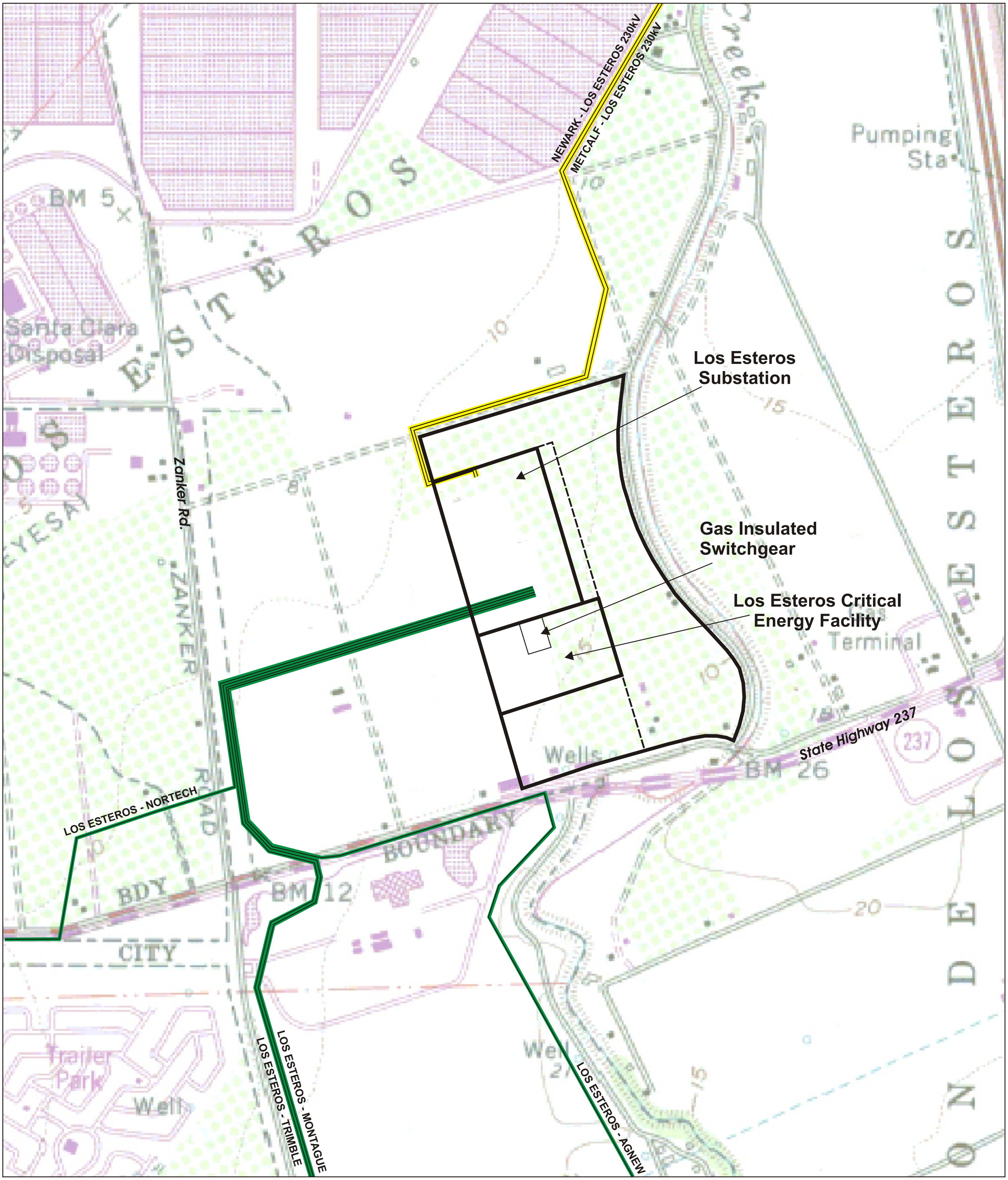
June 29, 2001

Prepared By:

CAI Commonwealth Associates Inc.

Jackson, Michigan

engineers • consultants • construction managers



115 kV
230 kV
Substation

N W E S

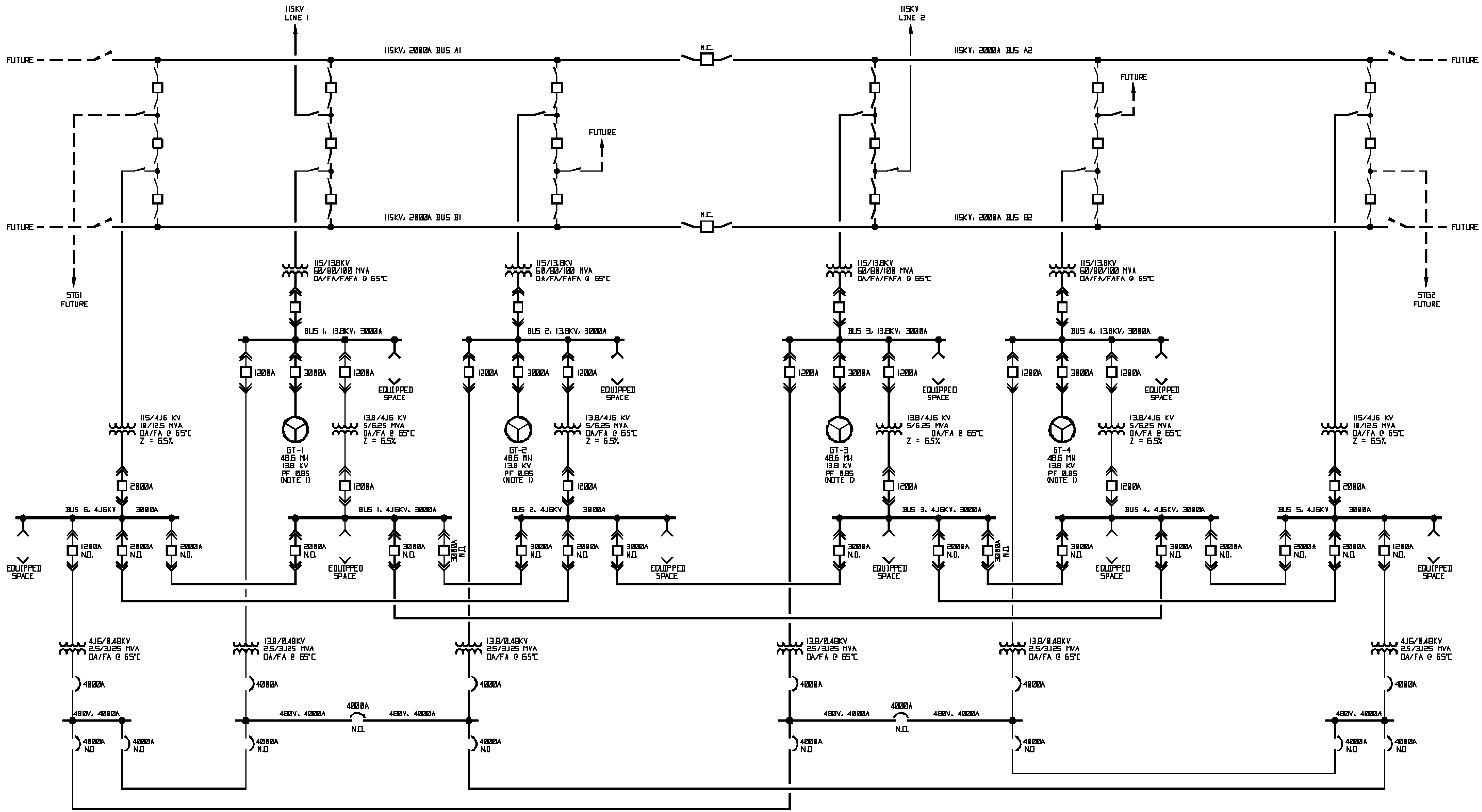
Scale: 1" = 1,000'
0 500 1000
Feet

California
Map Area

Figure 5.1-2
Proposed Los Esteros Critical Energy Facility
*c*POWER*
June 29. 2001

Prepared By:
CAI Commonwealth Associates Inc.
Jackson, Michigan
Engineers Consultants Construction Managers

Base Map Source: Sure!Maps Raster, USGS 7.5 minute topographic quadrangle maps.



NOTES:

1. NOMINAL OUTPUT OF COMBUSTION TURBINE GENERATOR @ ISO CONDITIONS (0' ELEVATION, 59°F, 60% R.H. AMBIENT) = 48.6 MW.

DATE	SYMBOL	REVISIONS	BY	CHECKED	APPROVED

DESIGN BY: C.OPFERMANN, DATE: 6/15/01
DRAWN BY: W.RICHARDSON, DATE: 6/15/01
CHECKED BY: B. FAUBERT, DATE: 6/18/01
APPROVED BY: DATE:
SCALE: NONE

c*Power
6601 KOLL CENTER PARKWAY # 100
PLEASANTON, CA

ACAD DWG FILE: 01254-E01

PROJECT TITLE:
NORTH SAN JOSE ENERGY CENTER

URS

DRAWING TITLE:
SIMPLE CYCLE ONE LINE DIAGRAM

DWG. NUMBER: Figure 5.2-1
ISSUE/REV: C

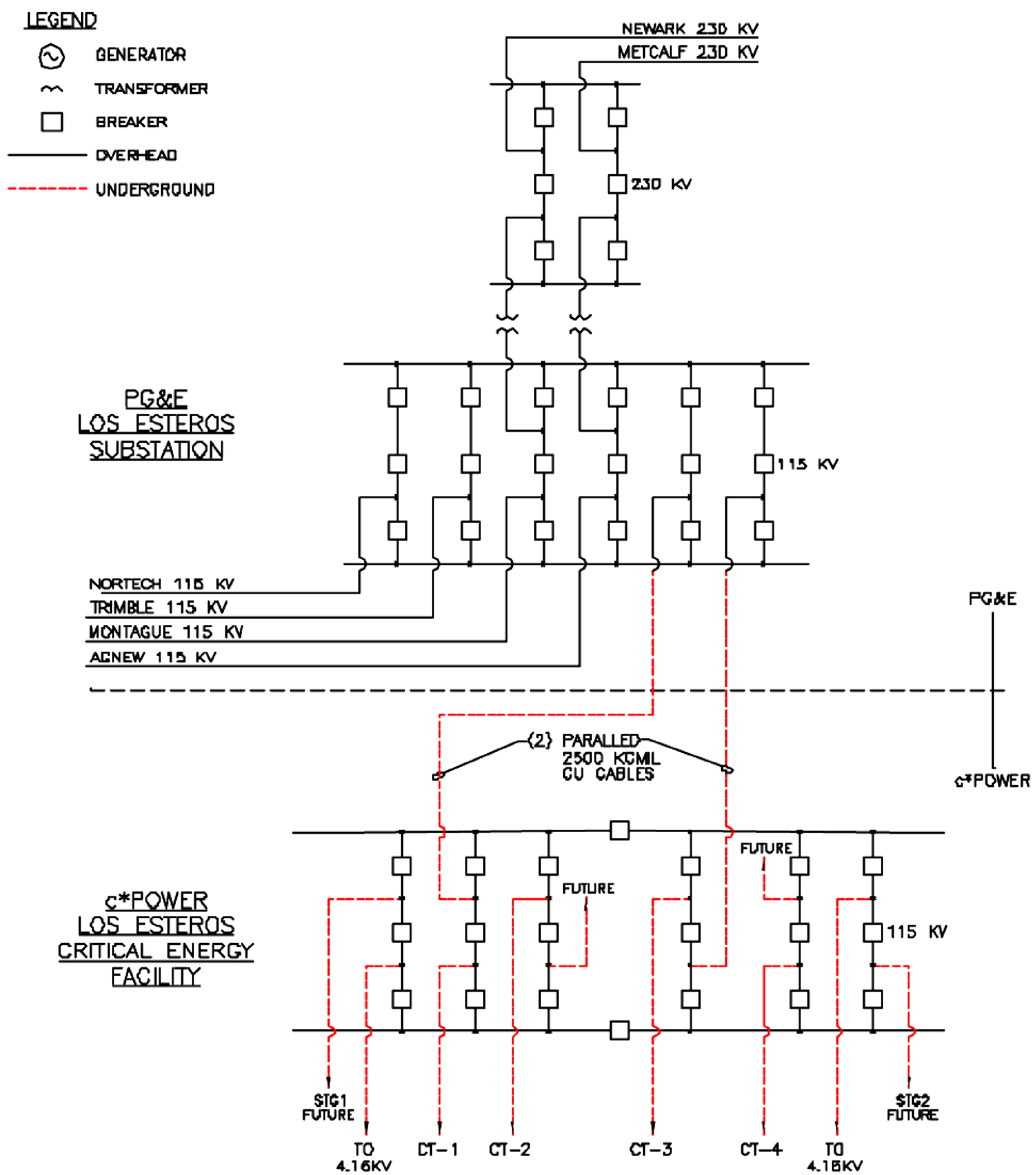
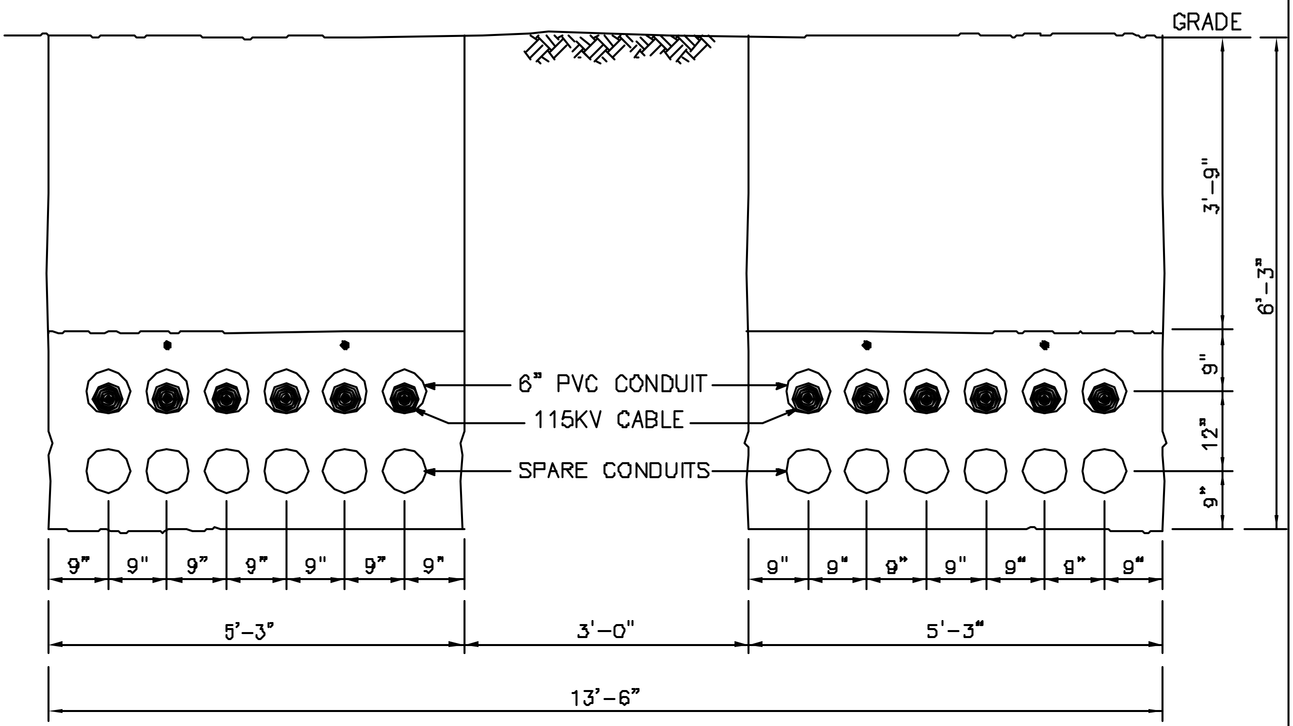


FIGURE 5.2-2
INTERCONNECTION TO LOS ESTEROS SUBSTATION ONE LINE DIAGRAM
APPLICATION FOR CERTIFICATION FOR LOS ESTEROS CRITICAL ENERGY FACILITY

D072001001RDD_63 (8/1/01)

CH2MHILL



TYPICAL CONDUIT DETAIL

Figure 5.2-3

Los Esteros Critical Energy Facility

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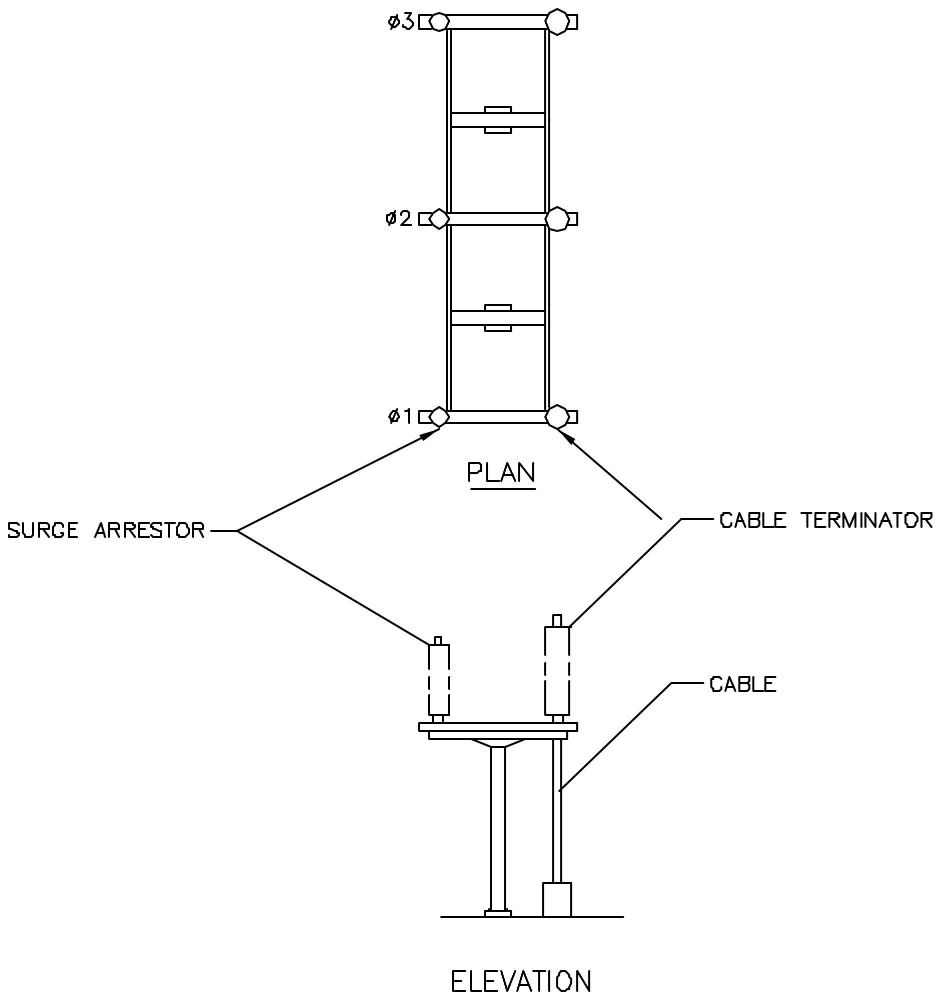
CAI Commonwealth Associates Inc.
Jackson, Michigan
06/01/01 Engineers Consultants Construction Managers



TYPICAL 115 KV CONNECTION DETAIL

Figure 5.2-4

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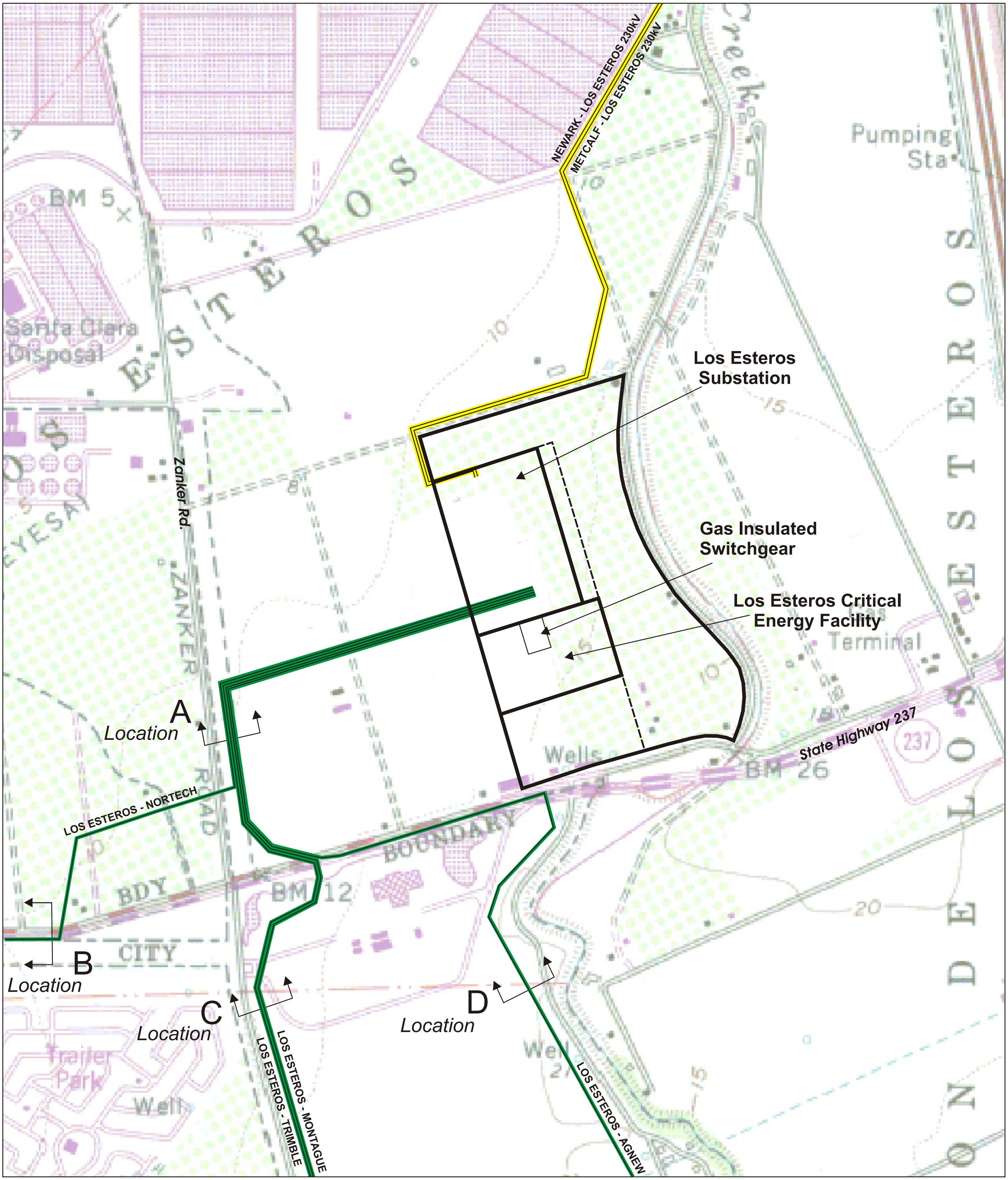

115 kV
230 kV
Substation

N W E S

Scale: 1" = 1,000'
0 500 1000
Feet

California
Map Area

Figure 5.5-1
Proposed Los Esteros Critical Energy Facility
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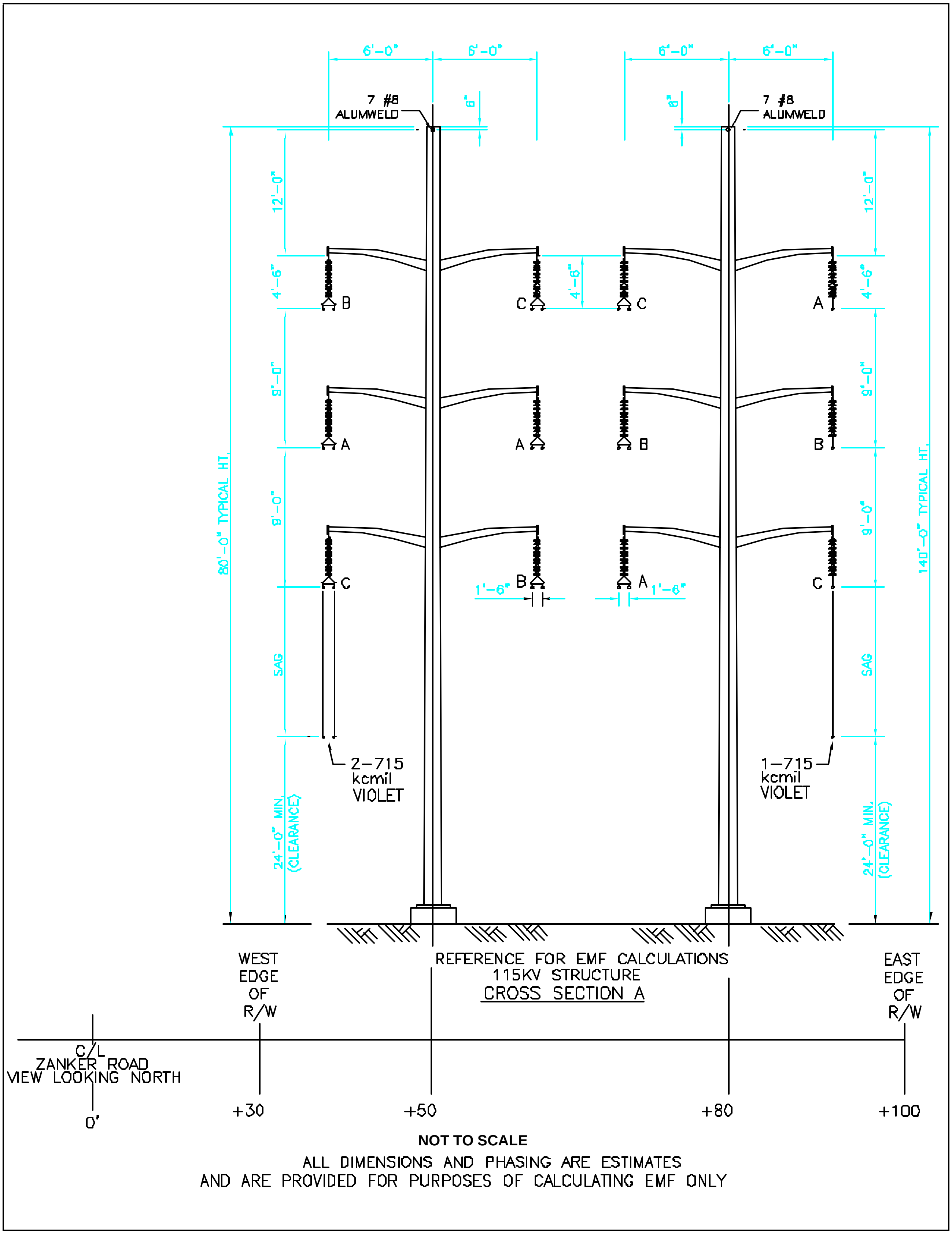
Base Map Source: Sure!Maps Raster, USGS 7.5 minute topographic quadrangle maps.



CROSS SECTION A
115kV Typical Double Circuit Structures

Figure 5.5-2

Los Esteros Critical Energy Facility

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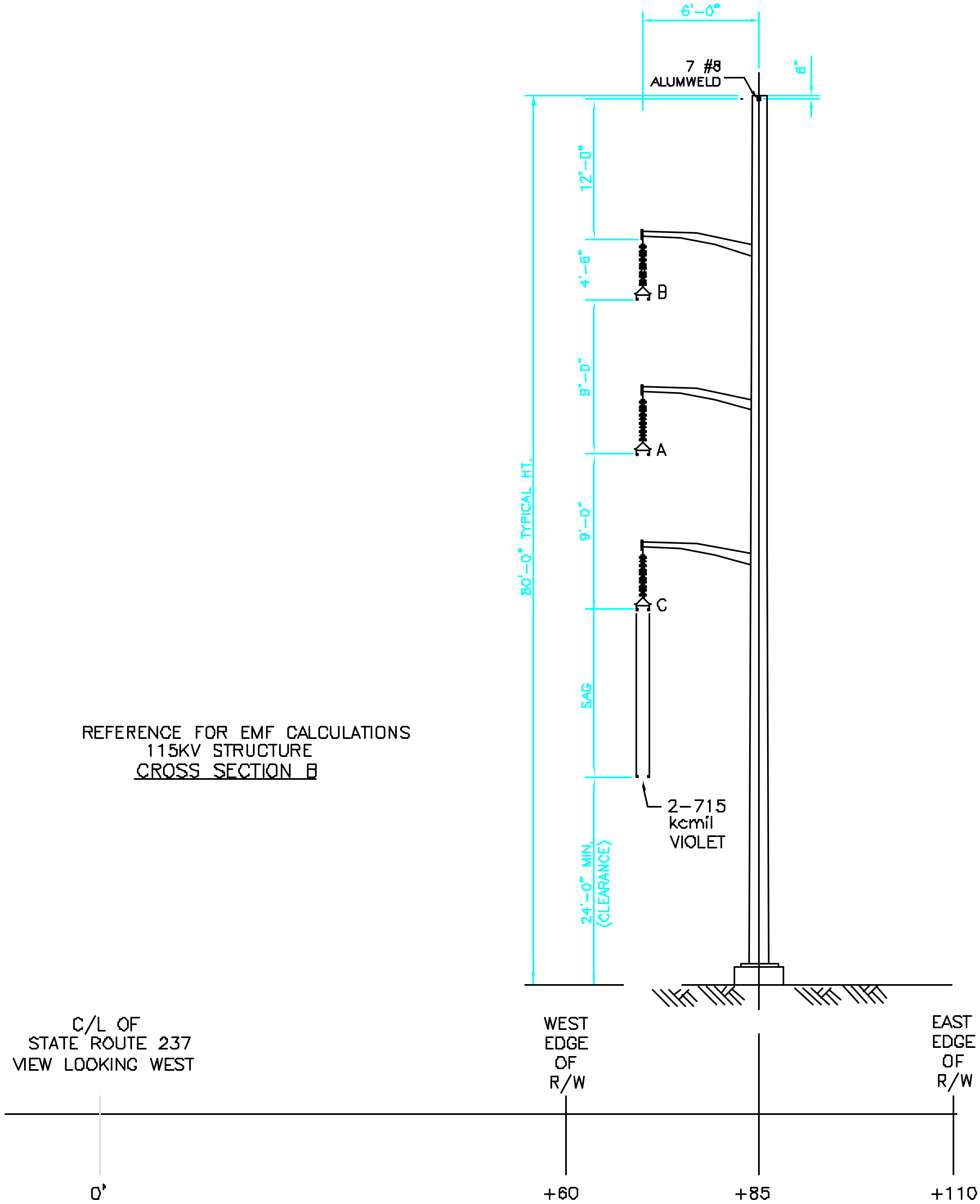
05/01/01



NOT TO SCALE

ALL DIMENSIONS AND PHASING ARE ESTIMATES
AND ARE PROVIDED FOR PURPOSES OF CALCULATING EMF ONLY

CROSS SECTION B
115kV Typical Double Circuit Structures

Los Esteros Critical Energy Facility

Figure 5.5-3

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05/01/01
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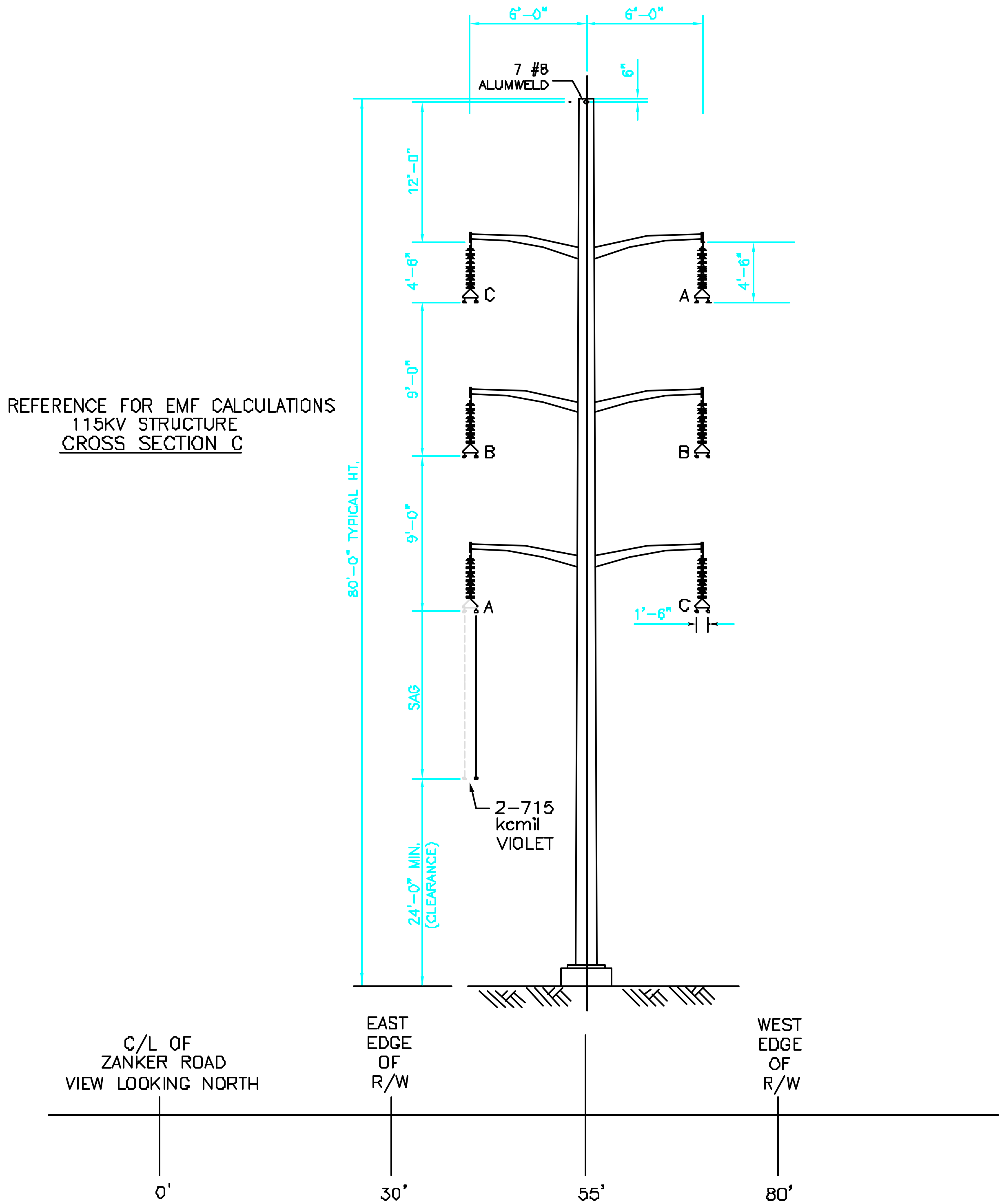

NOT TO SCALE

ALL DIMENSIONS AND PHASING ARE ESTIMATES
AND ARE PROVIDED FOR PURPOSES OF CALCULATING EMF ONLY

CROSS SECTION C

115kV Typical Double Circuit Structures

Figure 5.5-4

Los Esteros Critical Energy Facility

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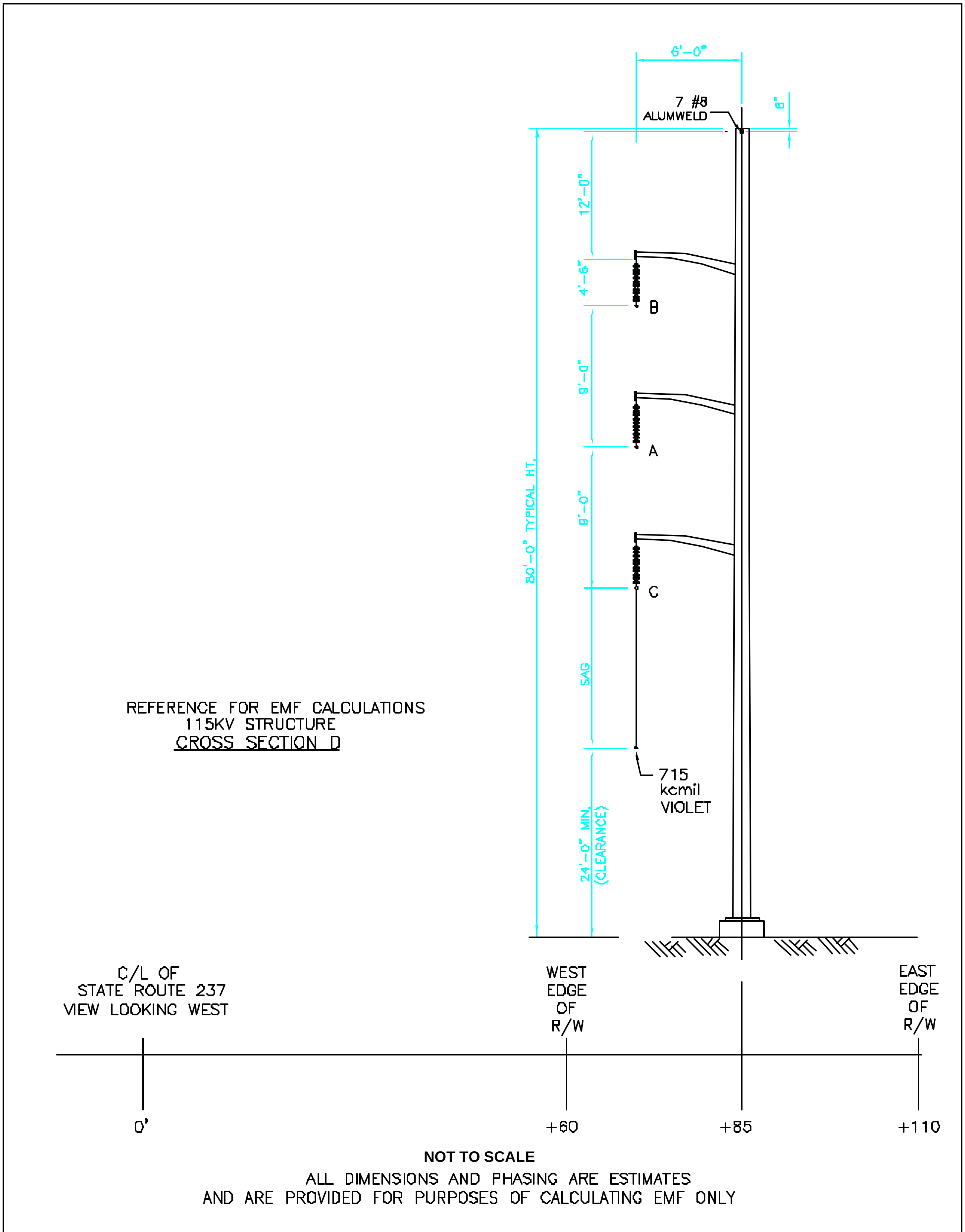

CROSS SECTION D

115kV Typical Double Circuit Structures

Figure 5.5-5

Los Esteros Critical Energy Facility

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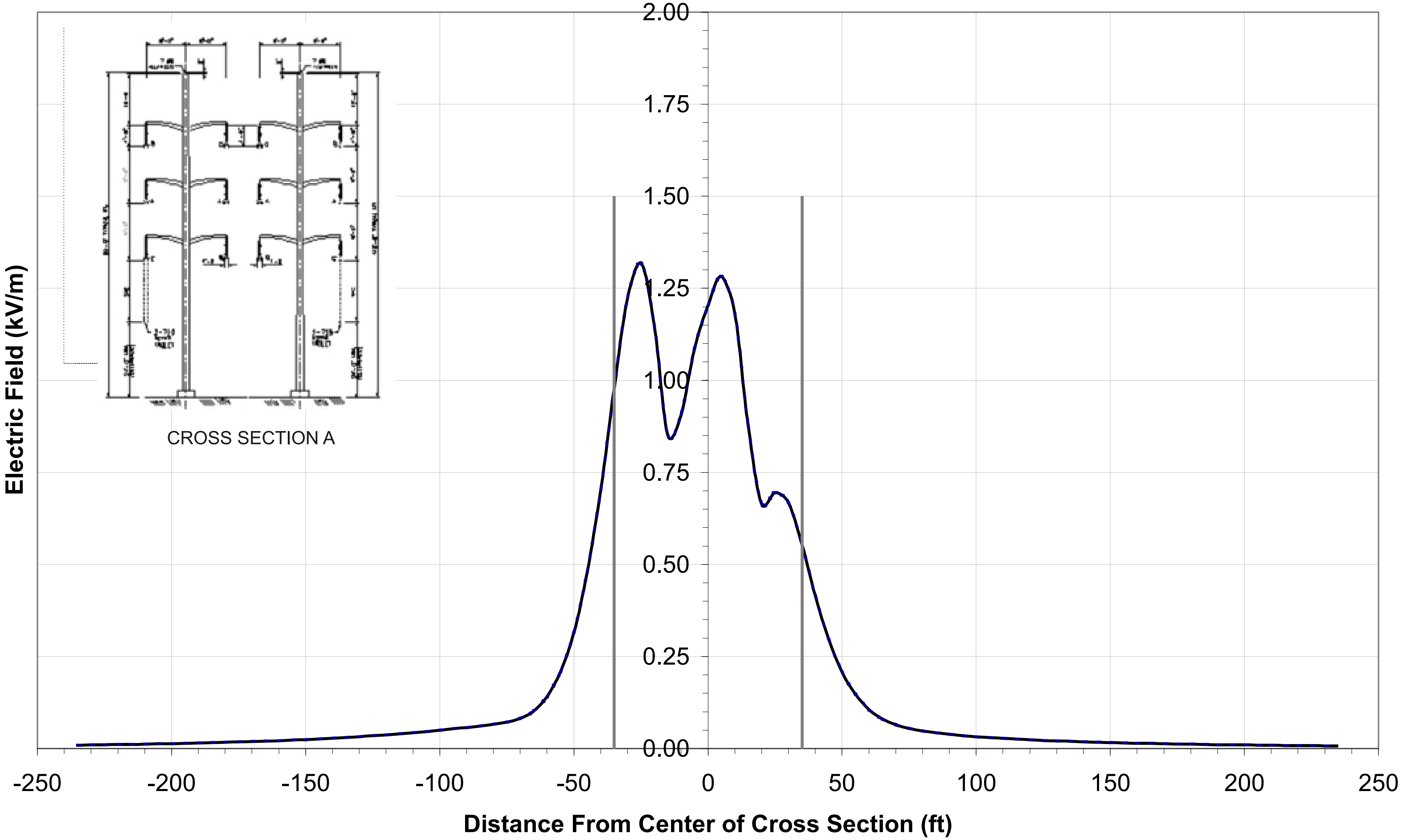
North San Jose Energy Center
Electric Field Strength (kV/m)
2 - 115 kV Double Circuit Lines



Cross Section A - Electric Field

Los Esteros Critical Energy Facility - c*POWER

Figure 5.5-6

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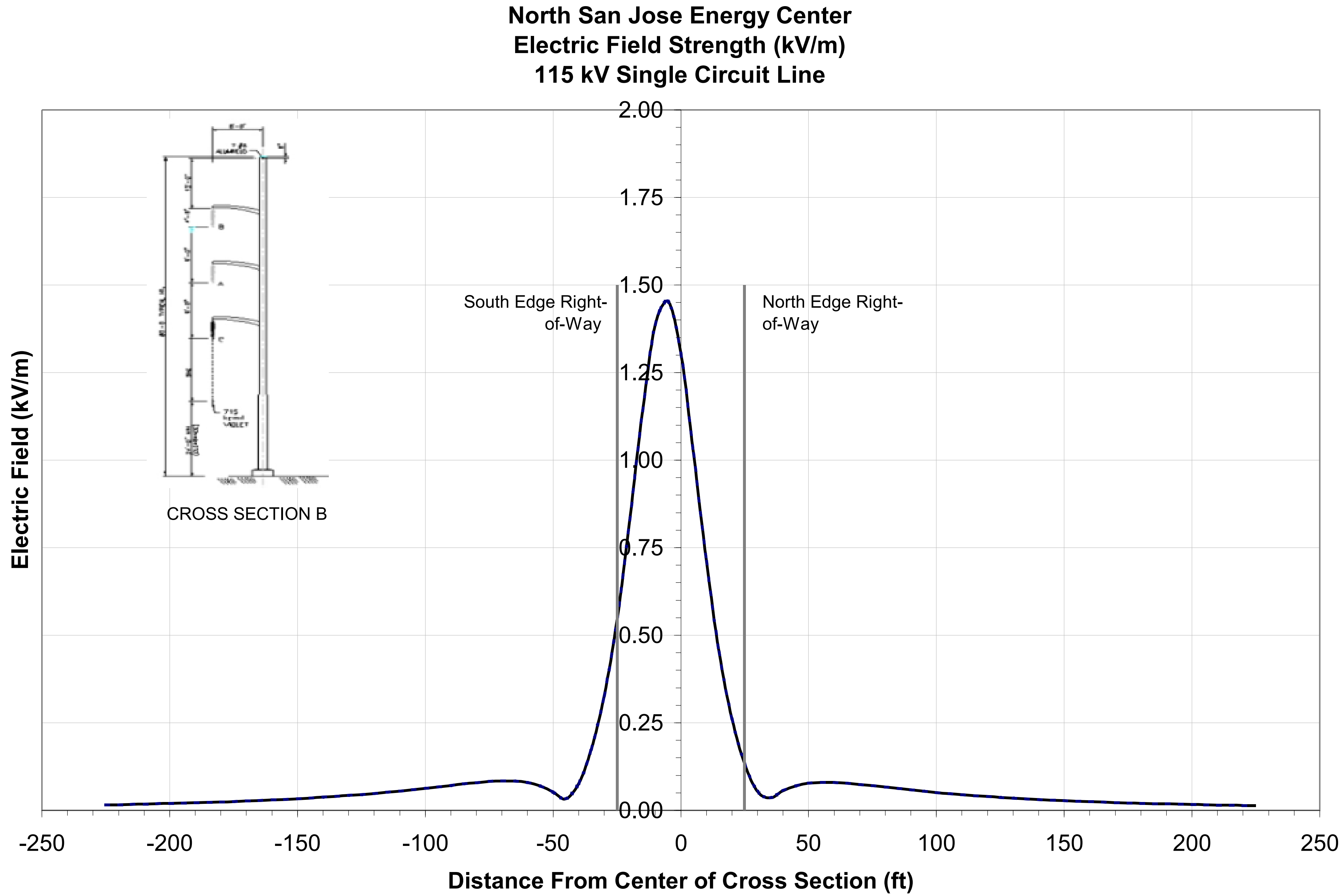

Cross Section B - Electric Field

Los Esteros Critical Energy Facility - c*POWER

Figure 5.5-7

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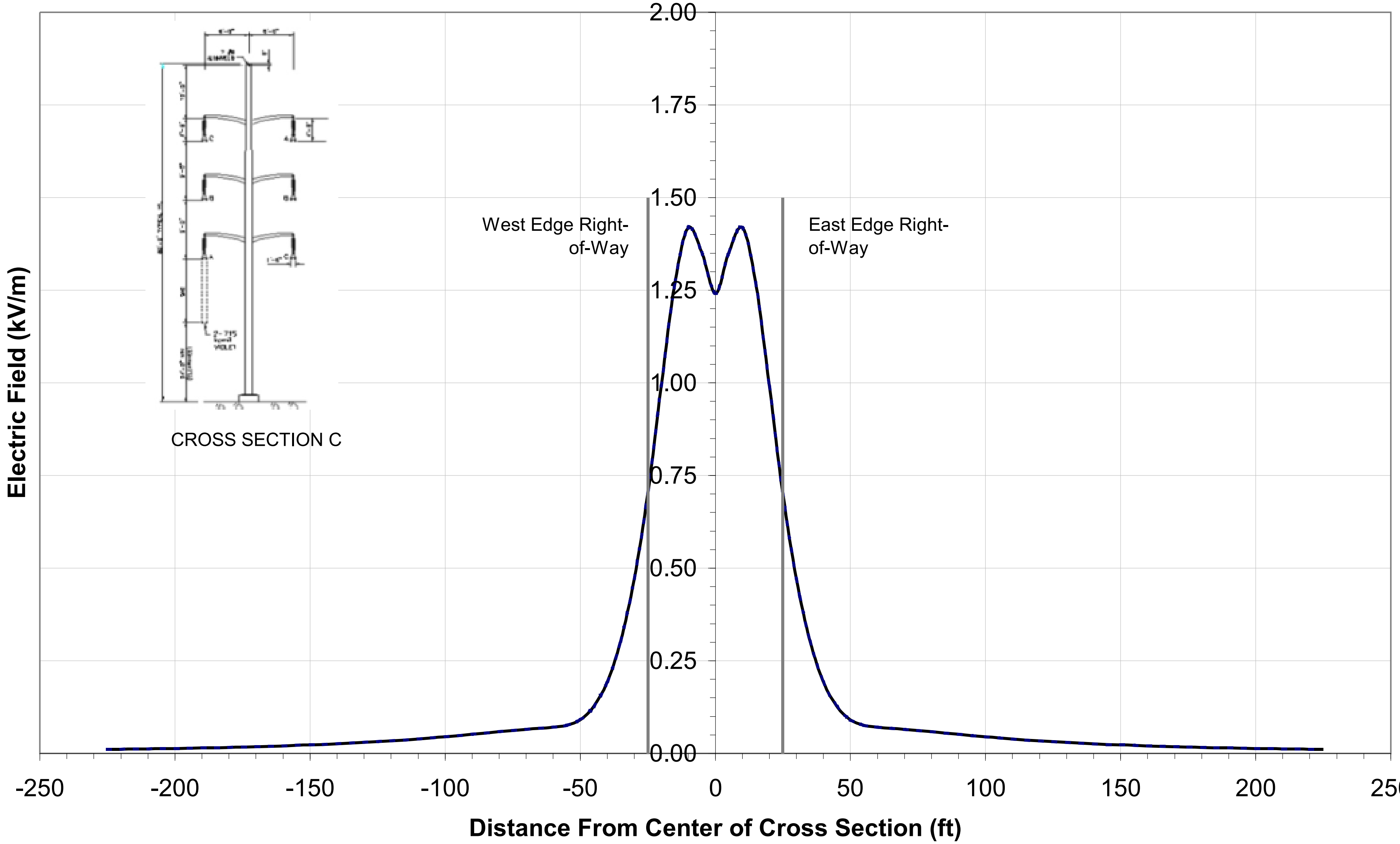
Engineers Consultants Construction Managers

North San Jose Energy Center
Electric Field Strength (kV/m)
1 - 115 kV Double Circuit Line



Cross Section C - Electric Field

Los Esteros Critical Energy Facility - c*POWER

Figure 5.5-8

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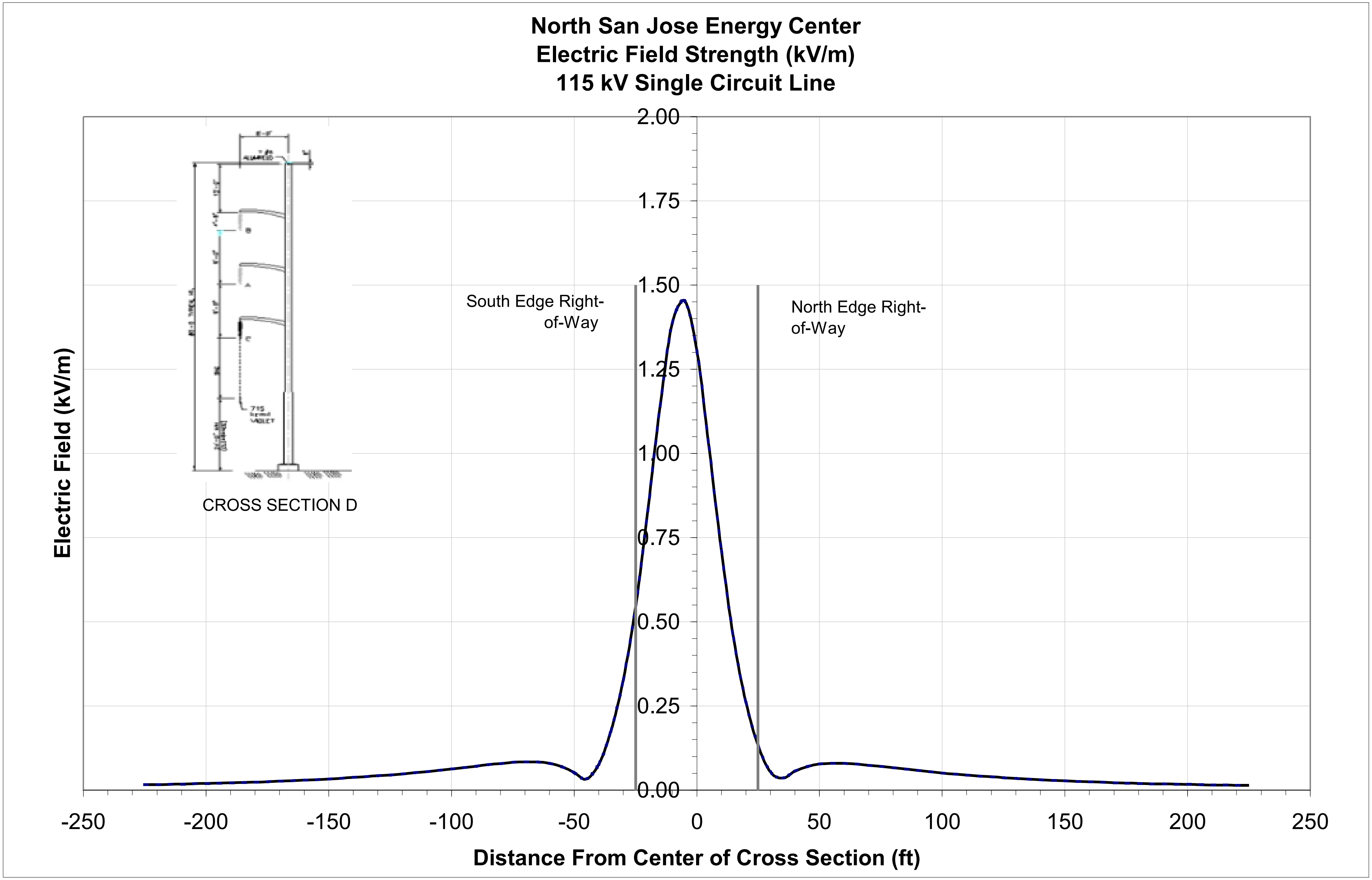

Cross Section D - Electric Field

Los Esteros Critical Energy Facility - c*POWER

Figure 5.5-9

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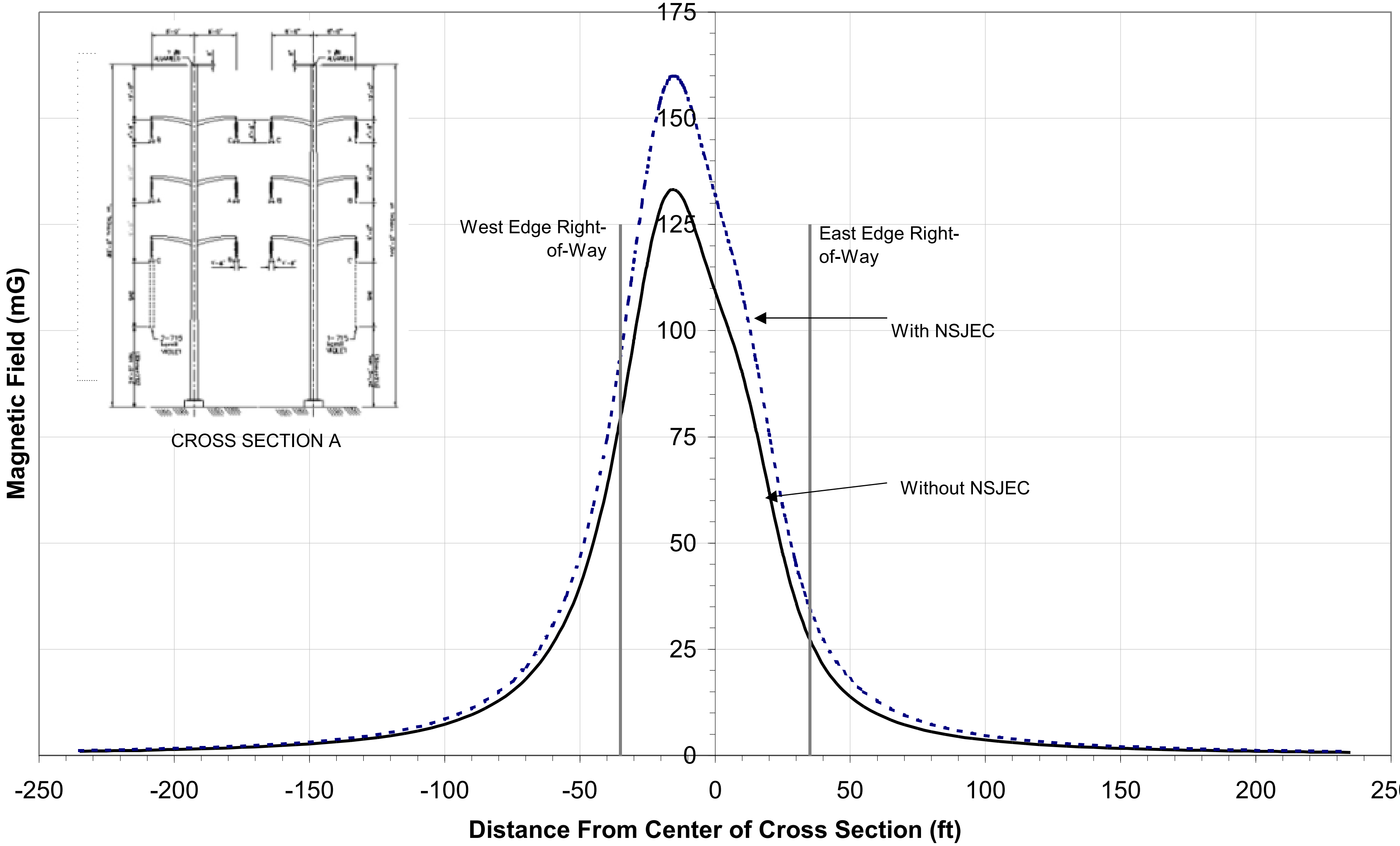
North San Jose Energy Center
Magnetic Field Strength (mG)
2 - 115 kV Double Circuit Lines



Cross Section A - Magnetic Field

Los Esteros Critical Energy Facility - c*POWER

Figure 5.5-10

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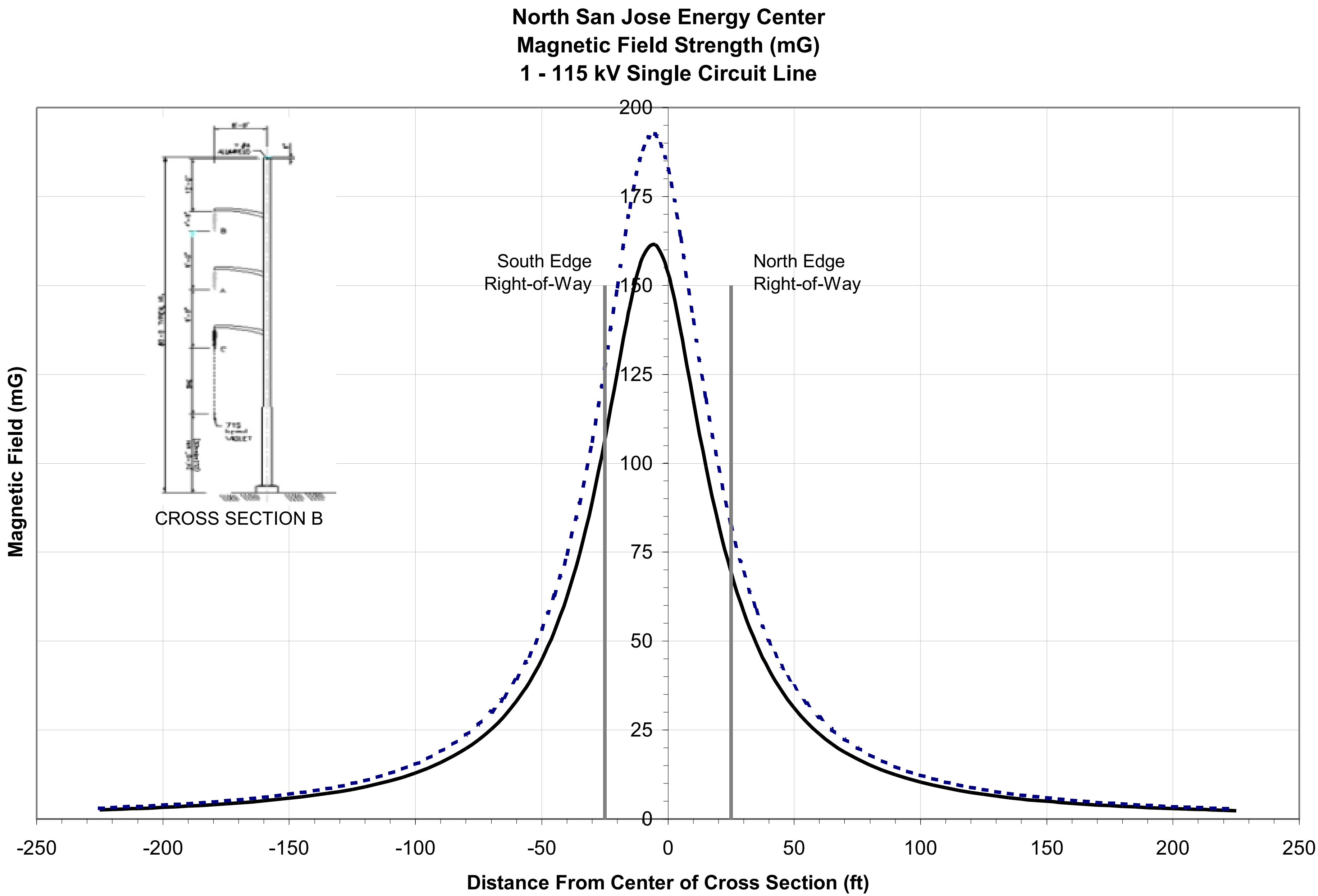

Cross Section B - Magnetic Field

Los Esteros Critical Energy Facility - c*POWER

Figure 5.5-11

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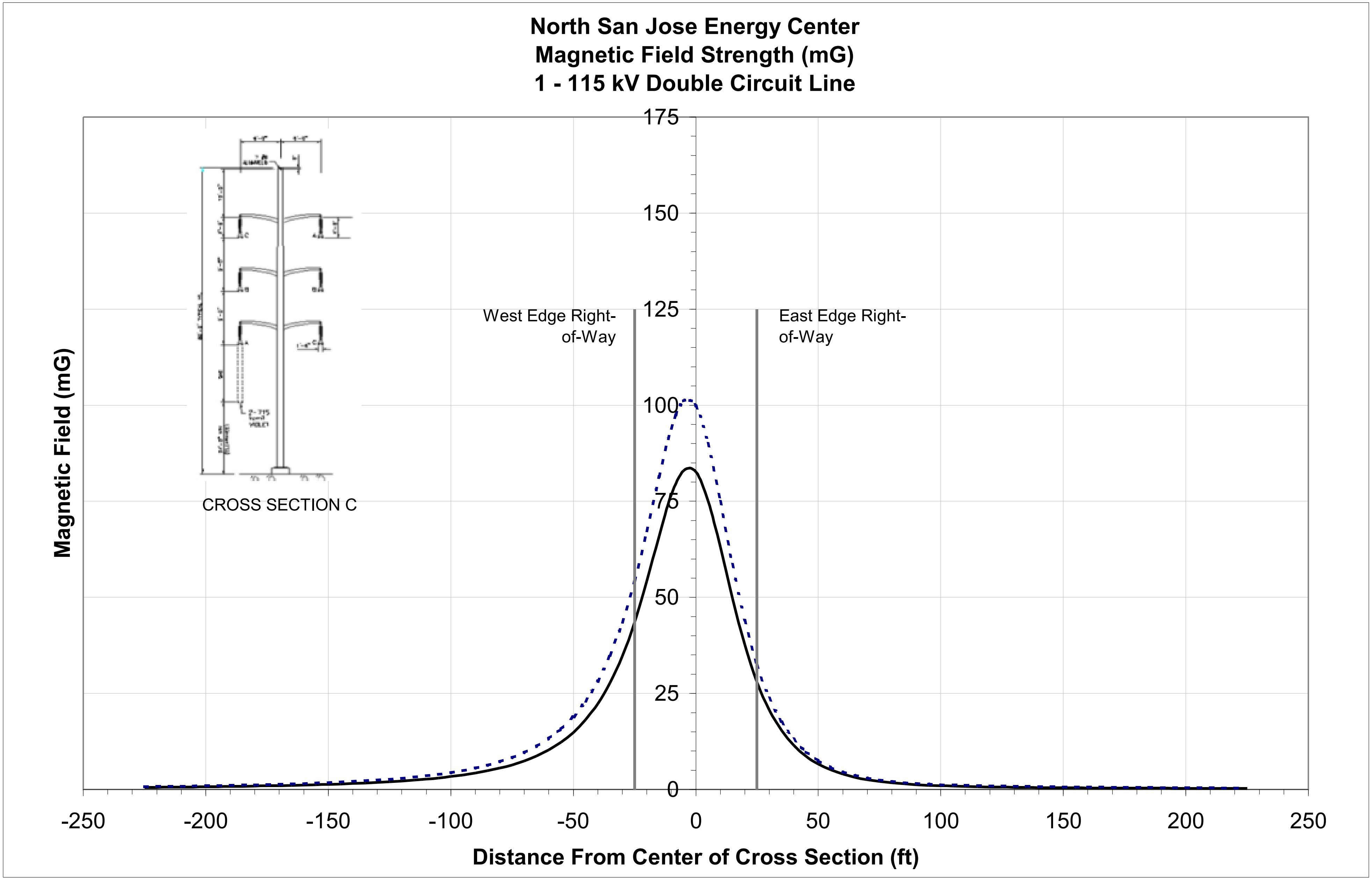

Cross Section C - Magnetic Field

Los Esteros Critical Energy Facility - c*POWER

Figure 5.5-12

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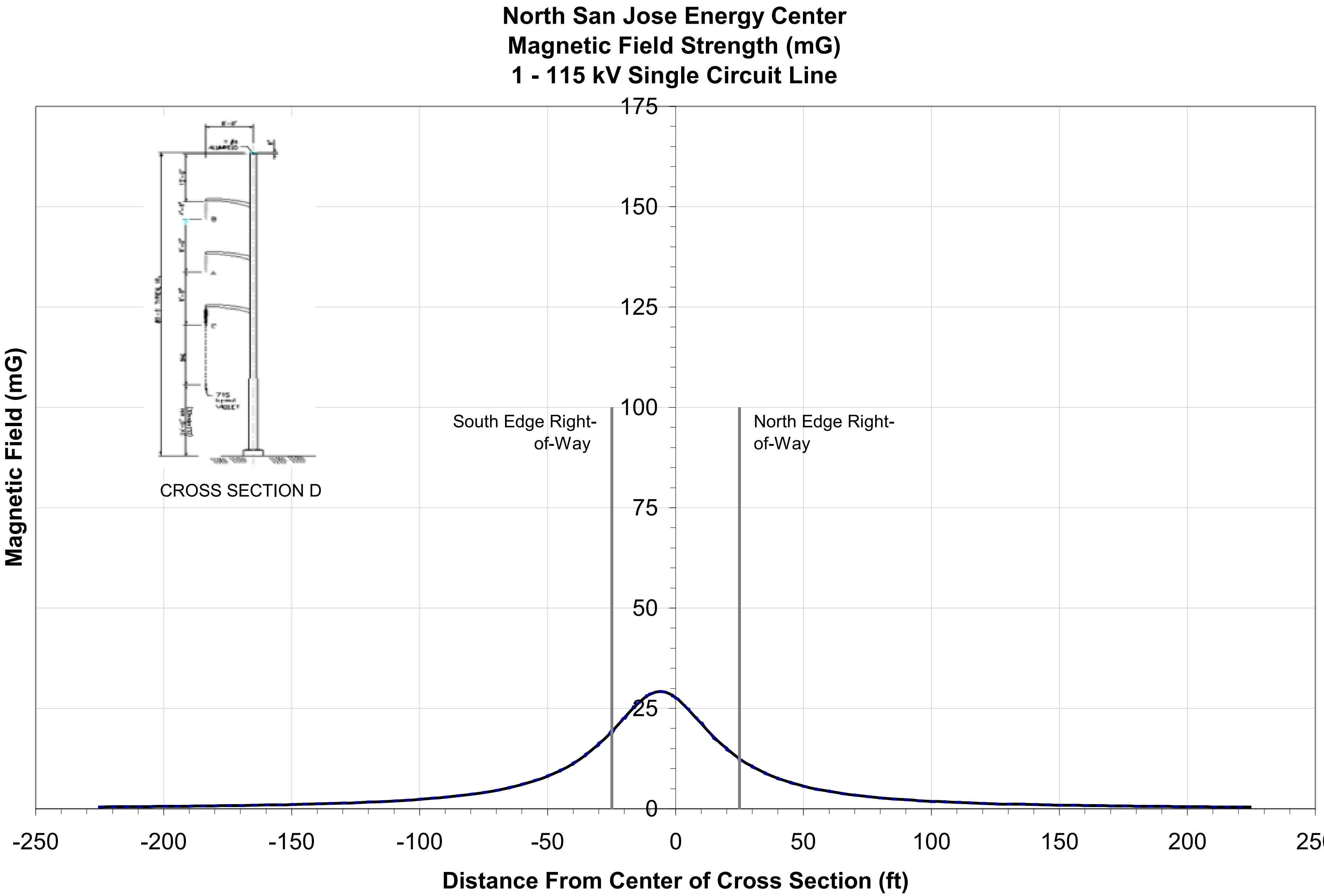
Engineers Consultants Construction Managers



Cross Section D - Magnetic Field

Los Esteros Critical Energy Facility - c*POWER

Figure 5.5-13

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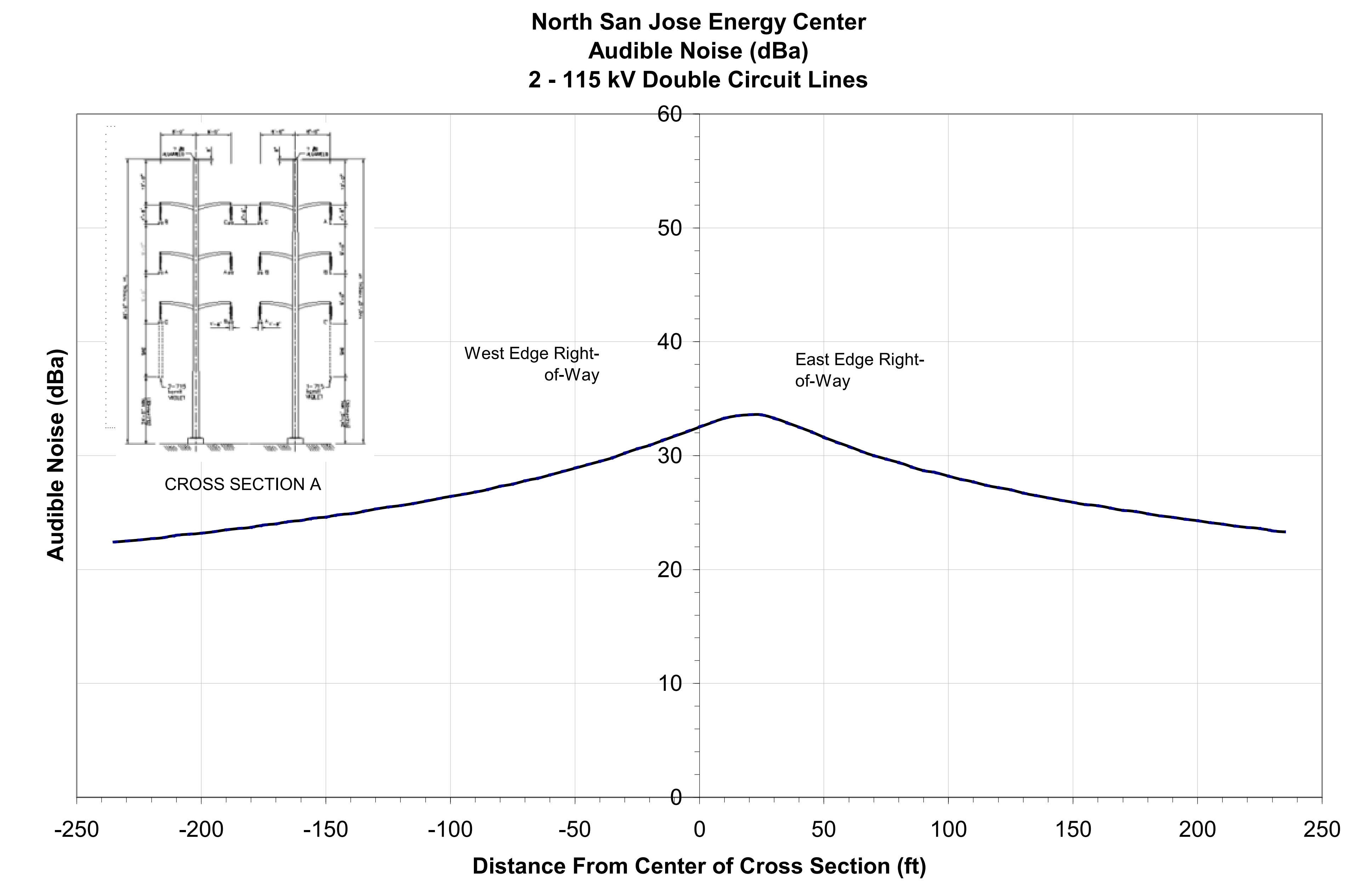

Cross Section A - Audible Noise

Los Esteros Critical Energy Facility - c*POWER

Figure 5.5-14

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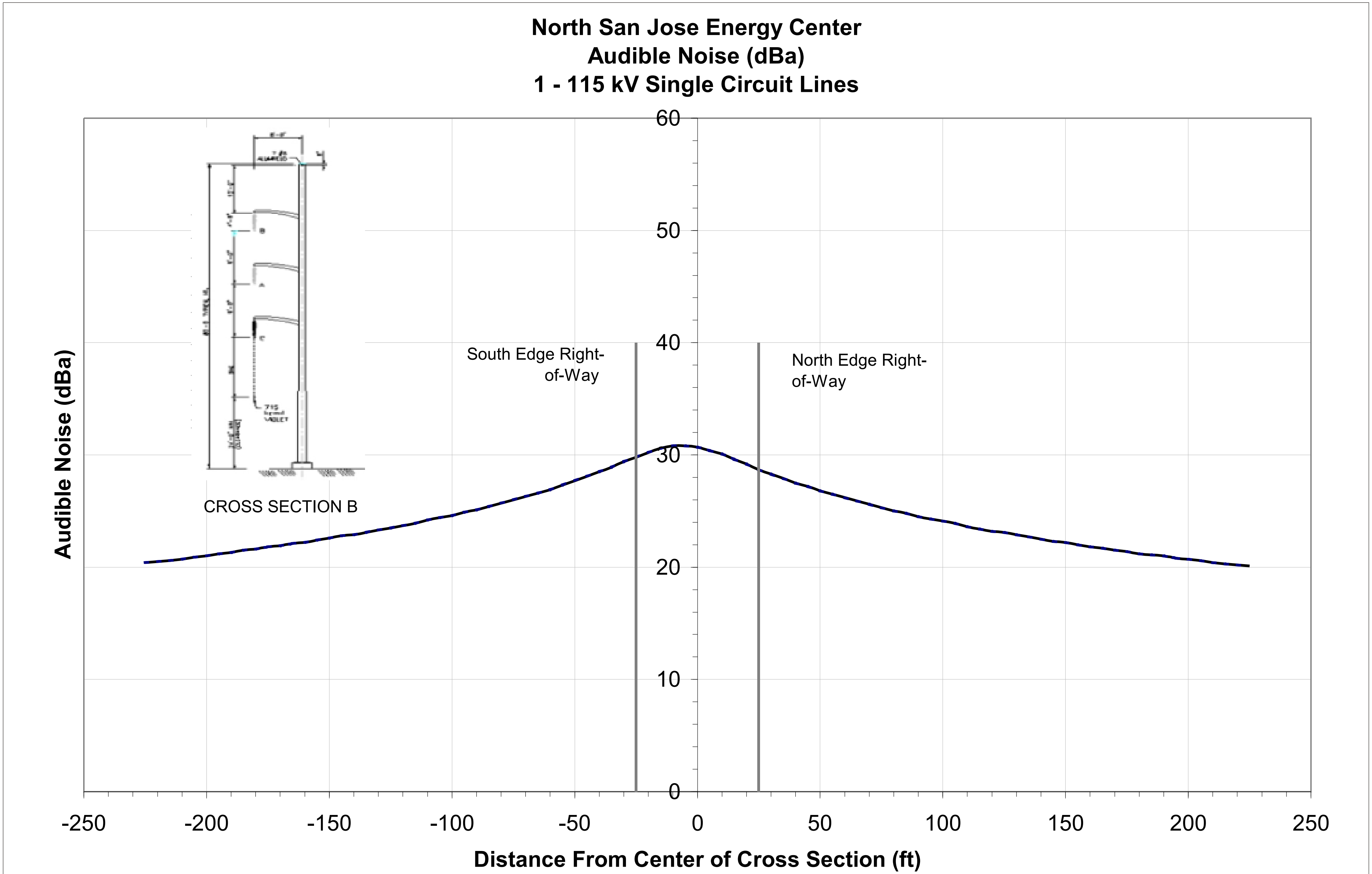

Cross Section B - Audible Noise

Los Esteros Critical Energy Facility - c*POWER

Figure 5.5-15

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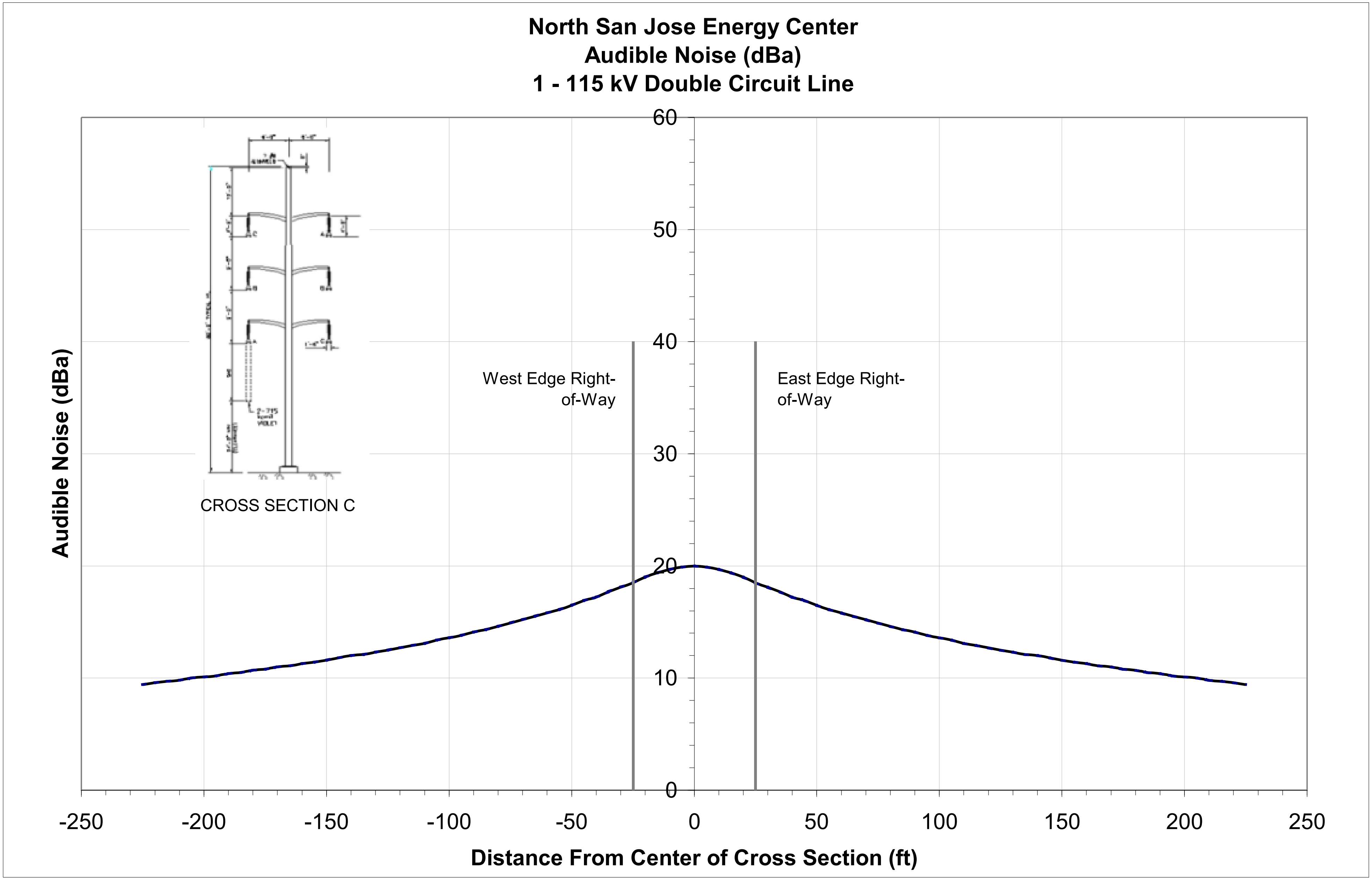

Cross Section C - Audible Noise

Los Esteros Critical Energy Facility - c*POWER

Figure 5.5-16

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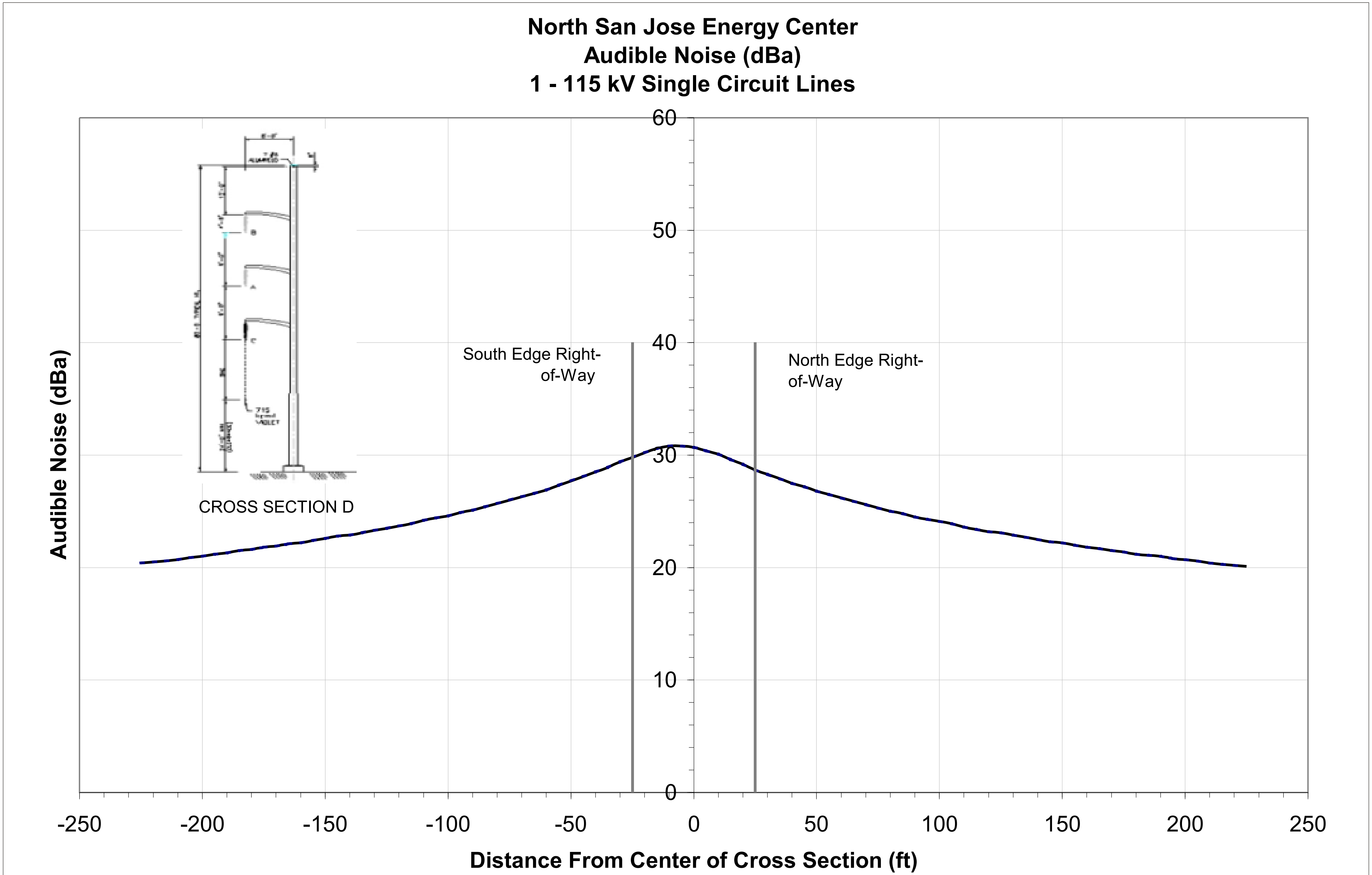
Engineers Consultants Construction Managers



Cross Section D - Audible Noise

Los Esteros Critical Energy Facility - c*POWER

Figure 5.5-17

June 19, 2001

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Jackson, Michigan
Engineers Consultants Construction Managers

SECTION 6

Natural Gas Supply

Natural gas for the facility will be delivered through a new 550-foot long 10 inch diameter pipeline that will connect to both of the existing PG&E gas transmission lines 101 and 109 located on the south side of the Lin-Hom property, adjacent to State Route 237, approximately 0.5 miles from the PG&E Milpitas Gas terminal (see Appendix 6.0A). This section describes the proposed gas supply line route. Alternative routes were not investigated due to the proximity of the natural gas connection. The gas supply line construction methods and the pipeline operating procedures are also described.

6.1 The Proposed Route

The proposed natural gas pipeline route is approximately 550 feet long (Figure 1.1-2). It will tie into both existing PG&E gas transmission pipelines L 101 and L 109 on the southern edge of the former Lin-Hom property. The pipeline will follow the western boundary on the former Lin-Hom property north to the site.

6.2 Alternative Routes

Because of the proximity of PG&E lines 101 and 109, alternative routing from the natural gas interconnection to the site was not investigated.

6.3 Construction Practices

The natural gas pipeline will be constructed with a minimum of at least one crew ("spread") working continuously along the pipeline right-of-way (ROW). Construction of the entire pipeline will require a peak workforce of approximately 20. Workers will park in the construction laydown area for the project site which is the former Lin-Hom property and walk to the construction area. The ROW will be accessed directly from Alviso-Milpitas frontage road and the former Lin-Hom property. Most major pieces of construction equipment may remain along the ROW during the course of construction. Besides providing worker parking, the project site will serve primarily as the location for storing the pipe and other pipeline construction materials. No additional storage locations are anticipated. Pipeline construction may take approximately 5 to 6 weeks and is expected to occur during the first quarter of 2002.

The pipeline will be constructed of alloyed carbon steel material in accordance with the American Petroleum Institute (API) specification for natural gas line pipe. Joints will be welded. A factory-applied corrosion protection coating will be applied on the pipe, welded joints will be field wrapped.

The construction of the natural gas pipeline will consist of the following activities:

1. **Trenching** – Trenching will consist of digging a 3- to 7-foot-wide trench and between 6 and 8 feet deep. The trench depth will be sufficient to meet the requirements of the governing agencies. However, the pipeline will be buried to provide a minimum cover of 36 inches. The excavated soil will be piled on one side of the trench and used for backfilling after the pipe is installed in the trench. The pipeline will be installed through trenching at all locations except where boring or directional drilling is required to pass beneath a highway, railroad, natural water course, or canal.

2. **Stringing** – Stringing will consist of trucking lengths of pipe to the ROW and laying them on wooden skids beside the open trench.

3. **Installation** – Installation will consist of bending, welding, and coating the weld joint areas of the pipe after it has been strung, padding the ditch with sand or fine spoil, and lowering the pipe string into the trench. Bends will be made by a cold bending machine or shop fabricated as required for various changes in bearing and elevation. Welding will meet the applicable API standards and be performed by qualified welders. Welds will be inspected in accordance with API Standard 1104. Welds will undergo 100 percent radiographical inspection by an independent, qualified radiography contractor. All coating will be checked for holidays (i.e., defects) prior to lowering into the trench.

4. **Backfilling** – Backfilling will consist of hidden text: unless the subsoil and topsoil is separated prior to trenching, as is required for agricultural areas, there should be no mention of separate backfilling of subsoil and topsoil)returning spoil back into the trench around and on top of the pipe, ensuring that the surface is returned to its original grade or level. The backfill will be compacted to protect the stability of the pipe and to minimize subsequent subsidence.

5. **Plating** – Plating will consist of covering any open trench at the end of a workday with steel plates to ensure public safety. Plates will be removed at the start of each workday. Efforts will be made to minimize the length of open trench along the ROW.

6. **Hydrostatic Testing** – Hydrostatic testing will consist of filling the pipeline with water, venting all air, increasing the pressure to the specified code requirements, and holding the pressure for a period of time. It is important that fresh water is used for testing, and it is anticipated that water from the San Jose Municipal Water System will be used. After hydrostatic testing of the pipeline, the test water will be chemically analyzed for contaminants and discharged into a dewatering structure consisting of straw or hay bales, geotextile fabric, and silt fencing. The discharged water will filter through the straw or hay bales and silt fence onto a jute matting before it is discharged. Temporary approvals for test water use and permits for discharge will be obtained as required.

7. **Cleanup** – Cleanup will consist of restoring the surface of the ROW by removing any construction debris, grading to the original grade and contour, and revegetating and repairing where required.

8. **Commissioning** – Commissioning will consist of drying the inside of the pipeline, purging air from the pipeline, and filling the pipeline with natural gas.

9. **Safety** – A construction safety plan will be prepared for the project. This plan will address specific safety issues, such as traffic control, working along traveled city streets, and other areas as required by permits.

6.4 Pipeline Operations

The proposed gas supply pipeline will be designed, constructed, and operated in accordance with Title 49, Code of Federal Regulations, Part 192 (49 CFR 192) and the California Public Utility Commission's General Order (G.O.) 112-E. Specifically, the pipeline will be designed in accordance with the standards required for gas pipelines in proximity to populated areas, based on actual population densities along the proposed pipeline route. It will be buried a minimum of 36 inches, or deeper, as required by Santa Clara County or Caltrans,

An operations and maintenance plan will be prepared addressing both normal procedures and conditions, and any upset or abnormal conditions that could occur. Periodic cathodic protection surveys will be performed along the pipeline, as required by 49 CFR 192 and G.O. 112-E. The pipeline will be under a continuos cathodic protection system.

The proposed pipeline will adopt a proactive damage prevention program. Markers identifying the location of the pipeline will be placed at all road crossings. The markers will identify a toll-free number to call prior to any excavation in the vicinity of the pipeline. Buried warning tape will be placed above the pipeline to warn of its presence.

The transported gas will be odorized as received from PG&E's main pipelines. Applicant will develop an emergency plan to provide prompt and effective responses to upset conditions detected along the pipeline or reported by the public.

Isolation block-valves will be installed at both ends of the proposed pipeline. These valves will be manually controlled, lockable, gear-operated ball valves. Both PG&E and c*Power will have access to the isolation block valve at the mainline tap, and c*Power alone will have access to the downstream isolation ball valve at the Facility site. PG&E will own and operate a metering facility to measure the gas supply to the project. A pipeline Supervisory Control and Data Acquisition (SCADA) system will provide flow rate and pressure data to PG&E and the project. Communication with PG&E gas line operations will be by dedicated telephone lines.

6.5 Permits and Permitting Schedule

The California Streets and Highways Code, Division 2, Chapter 5.5, Sections 1460-1470, mandates that an encroachment permit must be obtained from the city Public Works Department if there is an opening or excavation for any purpose in any highway. This and other permits, as well as the schedule for obtaining the permits, is presented in Table 6.5-1.

TABLE 6.5-1
Permit Schedule for Gas Supply Lines

Permit	Schedule	Contact
Franchise Agreement	6 weeks to 3 months	San Jose Department of Public Works John Gannon 408-277-4686
Encroachment Permit	6 weeks to 3 months	Caltrans Rudy Dantes 510-286-4401

6.6 References

Dantes, Rudy. Caltrans, Right-of-Way Dept., personal communication with Barry Homer, June 2001.

John Gannon, City of San Jose, Department of Public Works, personal communication with Barry Homer. June 2001.

SECTION 7

Water Supply

This section describes the quantity of recycled water required, the recycled water supply source, water pretreatment requirements, and planned waste water discharges for the Los Esteros Critical Energy Facility (LECEF) during Phase I of its operation. A water flow and balance chart describing the operation of all facilities at the plant is shown in Figure 2.2-6. Figure 7.1-1 presents a process flow schematic of the water treatment processes involved to attain the desired water quality for various uses at the project. Peak and average water requirements and flow rates throughout the system are shown. Details of the water requirements, water supply, water treatment, and water discharges are provided below. Details of water quality for the project water supply and discharges are presented in Section 8.14.

7.1 Water Requirements

The LECEF will require 0.50 million gallons per day (mgd) (347 gallons per minute [gpm]), or 560 acre-ft/year during average water supply demand conditions (assumed at 60°F ambient conditions) and 0.82 mgd (566 gpm), or 913 acre ft/year during peak water supply demand conditions (assumed at 108°F ambient conditions). During peak ambient conditions, approximately 50 percent of the water will be used for cooling (chilled water) the inlet air to the gas turbine. The cooling of the inlet air increases the air density and mass flow through the turbine, which produces more power output. During average ambient conditions, less than 10 percent of the total water requirement is needed for cooling water, as the inlet air requires much less cooling during the colder ambient temperatures.

The chilled water is produced by an electric chiller in the evaporator section. Chilled water is pumped to coils in the inlet duct supplying air to the gas turbine. As the air is cooled down, the water is heated prior to returning to the chiller. The heated water rejects heat in the condenser section of the chiller. This heat is transferred to a separate water loop which is circulated to the cooling tower to reject heat to the atmosphere.

The remainder of the water required for the LECEF will be used for injection into the NO_x suppression system and for power augmentation. A water injection metering system is added to the LM6000 to reduce NO_x emissions from gaseous fuel. Treated water is injected into the combustor through ports in the fuel nozzles to suppress NO_x production. The water is then discharged as a vapor in the heat stream of the turbine. Water treatment for both cooling water and NO_x suppression and power augmentation water is discussed in Section 7.3.

7.2 Water Supply

7.2.1 Water Supply Source

Where practical, the CEC and Regional Water Quality Control Board (RWQCB) encourages the use of non-potable water for cooling and other processes at industrial sites. LECEF fully implements this policy as the water supply for LECEF will be provided by San Jose/Santa Clara Water Pollution Control Plant (SJ/SC WPCP) through the South Bay Water Recycling (SBWR) program. The Cities of San Jose and Santa Clara jointly own the WPCP facility, but the City of San Jose operates and maintains the facility. The WPCP covers approximate 1,700 acres and is reportedly the largest advanced wastewater treatment plant in California, with a mean daily effluent flow capacity of 167 mgd. Approximately 10 mgd of the SJ/SC WPCP effluent is treated to CCR Title 22 standards for unrestricted use through the SBWR program. Recycled water will be used for cooling water, power augmentation, and NO_x suppression injection water requirements. A “will-serve” letter from SBWR describing water supply agreements is included in Appendix 7A. Any interruptions in the availability of the water supply will be mitigated by the provision of 24 hours worth of storage in onsite recycled water storage tanks for fire, cooling water, and NO_x suppression system makeup.

Potable water will be provided by the construction contractor and operations management, respectively, during the construction and operation phases of the project. The amount of potable water required is expected to be low, and will be supplied to the site in water trucks operated by local drinking water suppliers.

7.2.2 Recycled Water Supply Pipeline

Connection to the SBWR existing recycled water pipeline would require the construction of a 1,000-foot pipeline as shown on Figure 1.1-2. The pipeline is routed south of the project site and turns west, along an existing utility corridor, to connect to the existing SBWR pipeline parallel to State Route 237 on the adjacent WPCP buffer lands. The pipeline is expected to be between 18 and 24 inches in size. Potential impacts from the construction and operation of the pipeline are described in more detail in the environmental information section of this AFC. The proposed route has been surveyed for biological and cultural/paleontological impacts which are discussed in Sections 8.2, 8.3, and 8.16.

7.3 Water Treatment

As mentioned above, SBWR water meets CCR Title 22 standards for unrestricted use. Therefore, the recycled water is suitable for use as cooling tower makeup without extensive treatment, however, higher quality water is required to prevent damage to the turbine materials when used for NO_x control and power augmentation. Figure 7.1-1 outlines the expected water treatment to achieve the high quality water needs for the LECEF. The raw water from SBWR will flow by gravity to a microfiltration (MF) feed pump station. Transfer pumps will provide sufficient pressure to down-stream treatment processes. Automatic strainers and pressure control facilities will condition the feed supply. MF will be used to lower the total suspended solids (TSS) content of the water supply. After MF, the water will be divided into supply for the cooling towers and supply for NO_x suppression injection and power augmentation. Cooling water treatment may require the addition of chemicals such as a pH control agent (acid or caustic), a mineral scale dispersant (i.e. polyacrylate polymer), a corrosion inhibitor (phosphate based), and a biocide (hypochlorite or equivalent). MF is not required for treatment for the cooling tower makeup water, however, it is assumed that all the raw water will be microfiltered to conservatively estimate waste water flows. During the LECEF design phase, it will be determined whether it is appropriate and cost effective to microfilter both the cooling tower makeup water and the NO_x control and power augmentation water, or to use MF only for pretreatment for the higher water quality needs for NO_x control and power augmentation.

The water to be used for NO_x suppression injection and power augmentation will continue to be treated to remove impurities. Microfiltration will be used as pretreatment prior to the reverse osmosis (RO) system, as a precaution to prevent downstream membrane fouling. MF filtrate will flow to a storage tank from which it will be pumped to the RO system. Waste backwash and solids from the MF system and automatic strainers will be conveyed to the process wastewater sump prior to discharge to the SJ/SC WPCP. Chemical feed facilities required for the MF/RO system may include sodium hypochlorite (for biofoul control), sulfuric acid (for RO feedwater pH control), threshold inhibitor (anti-scalant for the RO membranes), and chemicals associated with the microfiltration and reverse osmosis cleaning systems (i.e. sodium hydroxide, citric acid, and proprietary detergents such as Memclean C and KleenMCT103).

The RO product, or permeate, is then fed to an Electrodialysis (EDI) system to reduce any remaining ions to the required concentrations for feed into the turbine. EDI is a continuous electrodialytic regeneration of mixed bed ion exchange resin involving a membrane process in which the driving force is electrical. It uses semi-permeable membranes with anion and cation exchange properties. Electrodes are placed on either side of the stack of membranes. When a direct current is applied to the electrodes, the anions migrate toward the anode and the cations migrate toward the cathode. The cation exchange membranes allow only the passage of the cations and the anion exchange membranes allow only the passage of the anions. The cation and anion membranes are placed alternately, which creates concentration and dilution in alternate compartments. The EDI technology requires periodic membrane maintenance similar to the RO technology. However, the EDI technology is less operational and maintenance intensive than a traditional demineralizer system. The ion exchange resin does not need to be regenerated due to the continuous electrodialytic regeneration process.

Product water from the EDI system will be stored in product water storage tanks. RO concentrate and a small waste stream from the EDI will flow to the process wastewater sump prior to discharge to the SJ/SC WPCP.

7.4 Wastewater Collection and Disposal

The main wastewater streams which will be generated from the LECEF include the following:

- MF backwash
- RO concentrate
- EDI waste
- Cooling tower blowdown

- Plant drainage
- Sanitary wastes

Each industrial stream will be monitored separately, as appropriate, to ensure the achievement of all industrial waste discharge limits, before contribution to the process wastewater sump and ultimate discharge into the sanitary sewer. The expected quality of each of these waste streams is discussed in Section 8.14. The total discharge from the project during peak operating conditions is expected to be 206 gpm, or 0.30 mgd. The total discharge during average operating conditions is 122 gpm, or 0.18 mgd. A description of each of the waste streams is presented below.

7.4.1 MF Backwash

The MF system will be backwashed periodically, using microfiltered water, generating a waste stream of similar quality to the influent water, with a higher solids content. Approximately 5 percent of the influent to the MF will be lost through the filtration process and be removed in the backwash stream. The expected peak MF backwash flow is 27 gpm, with an average flow of 17 gpm.

7.4.2 RO Concentrate

The RO concentrate is the stream rejected by the RO membranes to produce the high quality permeate. The RO concentrate contains metals and inorganics in a concentrated form. Approximately 20 percent of the influent to the RO will be rejected as RO concentrate. The expected flow of RO concentrate is between 56 gpm and 60 gpm.

7.4.3 EDI Waste

The waste stream rejected from the EDI consists of the ions removed during the polishing process. Approximately 10 percent of the influent to the EDI may be lost through the process to generate a small flow (approximately 22 to 24 gpm) of waste ions rejected from the membrane process. Depending on the EDI system selected, higher recoveries (i.e. 98 percent) are achievable, however, the worst case recovery was assumed here for a conservative estimate. In addition, this waste stream will be of such high quality, it may be handled internally within the LECEF process (i.e. added to the cooling tower makeup) and may not be discharged as an industrial wastestream during actual operation. For purposes of estimating the total possible wastewater discharge, the EDI waste stream is included here as an industrial discharge.

7.4.4 Cooling Tower Blowdown

Circulating (or cooling) water system blowdown will consist of microfiltered recycled water from SBWR that has been concentrated 3 cycles and residues of the chemicals added to the circulating water. These chemicals will control scaling and biofouling of the cooling tower and corrosion of the circulating water piping and condenser tubes.

The volume of this wastestream is expected to be 16 gpm under average conditions and 97 gpm under peak conditions. Due to the use of cooling towers with the lowest achievable drift (0.0005 percent), the amount of TDS discharged to the atmosphere is very low. The drift quality is equivalent to the blowdown quality, therefore, the concentration of TDS is expected to be 2,282 mg/L at a flowrate of approximately 0.05 gpm, or equivalent to 1.4 lb/day.

7.4.5 Plant Drainage

Miscellaneous general plant drainage will consist of area washdown, sample drainage, equipment leakage, and drainage from facility equipment areas. Water from these areas will be collected in a system of floor drains, sumps, and pipes within the LECEF and sent to the process wastewater sump. Drains that could contain oil or grease will be routed through an oil/water separator. As this wastestream will be intermittent, an estimated flow of 5 gpm is assumed.

7.4.6 Sanitary Wastes

Sanitary wastewater from sinks, toilets and other sanitary facilities will be collected and discharged to the sanitary sewer. An average flow of 2 gpm is expected to be discharged.

7.4.7 Wastewater Sewer Pipeline

The WPCP is located approximately 0.5 miles to the northwest of the site and provides tertiary treatment of wastewater for several surrounding cities and sanitation districts. A new sanitary sewer pipeline will be constructed to convey the wastestreams from the LECEF to the SJ/SC WPCP, as is shown in Figure 1.1-2. This sewer line is expected to be between 12 inches and 15 inches in diameter, and approximately 2,700 feet in length. The pipeline is routed within the proposed access road right-of-way and connects to either the 60 or the 80 inch existing sewer pipeline in Zanker Road. If the capacity of these lines cannot support the tie in from the project, the new sewer line will be extended under Zanker Road and connected to existing sewers at the WPCP plant site. To provide for additional sewer flow capacity which may be required for the additional project phases, two larger pipes may be laid in the same ditch during construction. This would allow the flexibility to separate sanitary waste flows from industrial wastewater flows, if appropriate, and also mitigate environmental impacts from further phases when additional sewer capacity may be required. The proposed route has been surveyed for biological and cultural/paleontological impacts which are discussed in Sections 8.2, 8.3, and 8.16.

7.5 Construction Practices

For proposed pressure pipelines (such as the recycled water pipeline), ductile iron, concrete cylinder pipe with pretensioned steel, or PVC pipe may be used. Non-pressure pipelines (such as the sanitary sewer pipeline), PVC or VCP will be potentially feasible. Construction of these pipelines is anticipated to be accomplished using conventional pipelaying methods—open cut construction wherever possible—with “trenchless technologies,” such as bore and jack, microtunnelling, or directional drilling, used for crossing major obstacles such as rivers and creeks, highways, railroads, or other major infrastructure. All construction practices will follow the City of San Jose requirements for dust control measures to reduce impacts to a less-than-significant level. The equipment that will be used is as follows:

- Excavator
- Small crane (or boom truck) sized to manipulate a 20-foot section of pipe

- Trucks for removal of excavated material and for supplying imported trench backfill
- Truck with pipe and fittings

Paving equipment will be used to replace the pavement removed as part of the pipeline construction. Construction of the generating facility, including construction of the recycled water and wastewater pipelines, is expected to take place in December 2001, for a total duration of 30 days of actual construction. Major project milestones are listed in Table 2.2-2.

The peak workforce on the project during construction will be approximately 312, including construction craft persons and supervisory, support, and construction management personnel (see Section 8.8, Socioeconomics).

Construction will be scheduled between 6 a.m. and 6 p.m., Monday through Saturday. However, due to the accelerated schedule and urgency to place this plant into operation for summer 2002 peaking reliability, 24 hour per day, around the clock shift work may be required. During the startup phase of the project, some activities will continue 24 hours per day, 7 days per week. Materials and equipment will be delivered by truck.

The width of the construction work area will be approximately as follows:

- Diameter of pipe – 12 to 24 inches
- Width of trench – at least one foot greater than the pipe diameter
- Width of construction zone – 12 feet
- Width of typical construction easement – 20 to 30 feet

7.6 Permits and Permitting Schedule

The California Streets and Highways Code, Division 2, Chapter 5.5, Sections 1460-1470, mandates that an encroachment permit must be obtained from a city Public Works Department if there is an opening or excavation for any purpose in any highway. This, and other permits, as well as the schedule for obtaining the permits, are presented in Table 7.6-1.

TABLE 7.6-1
Permit Schedule for Water Supply/Discharge Lines

Permit	Schedule	Contact
Encroachment Permit	6 weeks to 6 months	San Jose Department of Public Works John Gannon 408-277-4686
Encroachment Permit	6 weeks to 6 months	Santa Clara County Department of Public Works

7.7 References

Shipes, Randy. 2001. South Bay Water Recycling Program. pers. comm. with Dave Richardson. June 14.

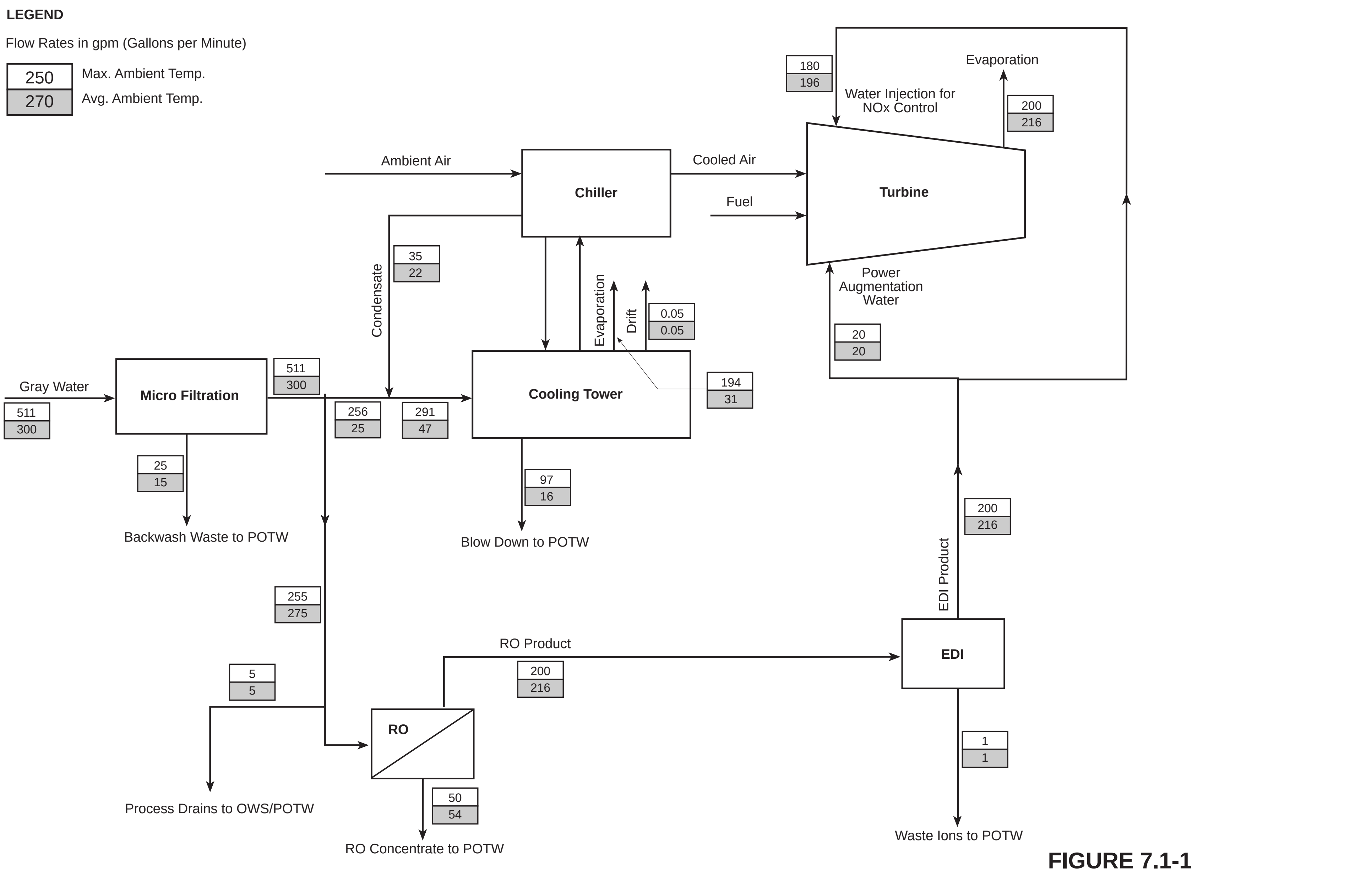

FIGURE 7.1-1
WATER TREATMENT FLOW DIAGRAM
APPLICATION FOR CERTIFICATION FOR LOS ESTEROS CRITICAL ENERGY FACILITY

CH2MHILL

E062001004SAC Figure 7_1-1.fh9

8.1 Air Quality

This section discusses issues related to potential air quality impacts resulting from the LECEF project. Section 8.1.1 presents the air quality setting, including geography, topography, climate and meteorology. Section 8.1.2 provides an overview of air quality standards and health effects. Section 8.1.3 discusses the criteria pollutants and existing air quality in the vicinity of the proposed project. The affected environment is analyzed in Section 8.1.4, and air quality regulatory agencies relevant to the project are identified; the LORS that can affect the project and project conformance are also identified in Section 8.1.4. Section 8.1.5 discusses the environmental consequences of emissions from the project and presents an overview of approaches for estimating facility impacts, modeling, and analysis. The screening health risk assessment, visibility screening analysis and construction impacts analysis are also discussed. Section 8.1.6 discusses compliance with LORS applicable to the project. An analysis of cumulative impacts is presented in Section 8.1.7. Nitrate deposition impacts are presented in Section 8.1.8. Mitigation for project air quality impacts is discussed in Section 8.1.9. A list of references used in preparing the section is provided in Section 8.1.10.

The LECEF project is proposed as a modification to the U.S. Dataport Planned Development (USD) Project certified by the San Jose City Council and serves to mitigate conditions of approval directly related to air quality impacts. As summarized in Section 2.0, the USD project included 4 dual-fuel-fired 10-MW turbine, 6 oil-fired 1.66-MW emergency engine generators, and 84 2-MW diesel back-up generators (DBUGs).

Due to California's energy demands in the next few years, increasing usage of DBUGs in the Bay Area will pose a threat to air quality (BAAQMD, 2001). DBUGs produce up to 600 times more NO_x per kilowatt and will most likely be used on hot days leading to smog problems. DBUGs also cause major public health impacts due to toxic air contaminants by increasing cancer risks.

The approval of this project will eliminate 90 future DBUGs and eliminate the need to operate existing Bay Area DBUGs.

8.1.1 Air Quality Setting

8.1.1.1 Geography and Topography

The project is located in north San Jose on Alviso-Milpitas Road, on the north side of State Highway 237 near Coyote Creek. The project site is at an elevation of approximately 5 feet above sea level. The nearest residences are located approximately 0.6 mile southwest, 0.8 mile east, and 1.4 miles southeast of the center of the project site. San Francisco Bay lies approximately 7 miles west-northwest of the site.

8.1.1.2 Climate and Meteorology

The overall climate at the Project site is dominated by the semi-permanent eastern Pacific high pressure system centered off the coast of California. This high is centered between the 140° west (W) and 150° W meridians, and oscillates in a north-south direction. Its position governs California's weather. In the summer, the high moves to its northernmost position, which results in strong northwesterly flow and negligible precipitation. A thermal low pressure area from the Sonoran-Mojave Desert also causes air to flow onshore over the San Francisco Bay area much of the summer.

In the winter, the high moves southwestward toward Hawaii, which allows storms originating in the Gulf of Alaska to reach northern California, bringing wind and rain. About 80 percent of the region's annual rainfall of approximately 14.4 inches[1] occurs between November and March.[2] During the winter rainy periods, inversions are weak or nonexistent, winds are often moderate, and the air pollution potential is very low. During summer and fall, when the Pacific high becomes dominant, inversions become strong and often are surface-based; winds are light and the pollution potential is high. These periods are often characterized by winds that flow out of the Central Valley into the Bay Area and often include tule fog.

Temperature, wind speed, and direction data have been recorded at a meteorological monitoring station at the nearby Alviso Sewage Treatment Plant (STP) at a station operated by the Bay Area Quality Management District (BAAQMD). The average annual temperature is 60 degrees Fahrenheit [°F]. The average July temperature is 70°F; winter temperatures average 50°F in January.[3]

Air quality is determined primarily by the type and amount of pollutants emitted into the atmosphere, the topography of the air basin, and local meteorological conditions. In the Project area, stable atmospheric conditions and light winds can provide conditions for pollutants to accumulate in the air basin when emissions are produced. The Santa Cruz Mountains and Hayward Hills on either side of the South Bay restrict horizontal dilution. This alignment of terrain also channels winds from north to south, carrying air pollution from the northern Peninsula toward San Jose. The predominant winds in California are shown in Figures 8.1-1 through 8.1-4. As indicated in the figures, winds in California generally are light and easterly in the winter, but strong and westerly in the spring, summer, and fall.

Wind patterns at the project site can be seen in Figures 8.1-5a through 8.1-9e, which show quarterly and annual wind roses for meteorological data collected at the BAAQMD's Alviso STP weather station between 1995 and 1999. It can be seen that the winds are persistent (less than 1 percent calm conditions) and predominantly bimodal. On an annual basis, approximately 47 percent of the winds come from the west-northwest through north-northwest, and approximately 22 percent from south-southeast through the southeast. Winds are predominantly from the northwest during the summer months.

The mixing heights of an area are affected by the eastern Pacific high pressure system and marine influences. Often, the base of the inversion is found at the top of a layer of marine air, because of the cooler nature of the marine environment. Smith, et al. (1984) reported that at Oakland, the nearest upper-level meteorological station (located approximately 25 miles northwest of the project site), 50th percentile morning mixing heights for the period 1979–80 were on the order of 1770 feet (530 to 550 meters) in summer and fall, and 3600 to 3900 feet (1100 to 1200 meters) in winter and spring. The 50th percentile afternoon mixing heights ranged from 2150 and 3030 feet (660 to 925 meters) in summer and fall, and over 3900 feet

[1] City of San Jose website, http://www.ci.san-jose.ca.us/city_mgr/cityfacts/Aglance.html

[2] "Climate of the States—California," U.S. Department of Commerce, Weather Bureau, December 1959.

[3] City of San Jose website, op.cit.

(over 1200 meters) in winter and spring. Such mixing heights provide generally favorable conditions for the dispersion of pollutants. Inland areas, where the marine influence is weaker, often experience strong ground-based inversions during cold weather periods. These inversions inhibit dispersion of low-lying sources of air pollution, such as cars, trucks and buses, and can result in high pollutant concentrations.

8.1.2 Overview of Air Quality Standards

The U.S. Environmental Protection Agency (USEPA) has established national ambient air quality standards (NAAQS) for ozone, nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), particulate matter with aerodynamic diameter less than or equal to 10 microns (PM_{10}), particulate matter with aerodynamic diameter less than or equal to 2.5 microns ($PM_{2.5}$), and airborne lead. Areas with air pollution levels above these standards can be considered "nonattainment areas" subject to planning and pollution control requirements that are more stringent than standard requirements.

In addition, the California Air Resources Board (CARB) has established standards for ozone, CO, NO_2, SO_2, sulfates, PM_{10}, airborne lead, hydrogen sulfide, and vinyl chloride at levels designed to protect the most sensitive members of the population, particularly children, the elderly, and people who suffer from lung or heart diseases.

Both state and national air quality standards consist of two parts: an allowable concentration of a pollutant, and an averaging time over which the concentration is to be measured. Allowable concentrations are based on the results of studies of the effects of the pollutants on human health, crops and vegetation, and, in some cases, damage to paint and other materials. The averaging times are based on whether the damage caused by the pollutant is more likely to occur during exposures to a high concentration for a short time (one hour, for instance), or to a relatively lower average concentration over a longer period (8 hours, 24 hours, or 1 month). For some pollutants there is more than one air quality standard, reflecting both short-term and long-term effects. Table 8.1-1 presents the NAAQS and California ambient air quality standards for selected pollutants. The California standards are generally set at concentrations much lower than the federal standards and in some cases have shorter averaging periods.

EPA=s new NAAQS for ozone and fine particulate matter went into effect on September 16, 1997. For ozone, the previous one-hour standard of 0.12 ppm was replaced by an eight-hour average standard at a level of 0.08 ppm. Compliance with this standard will be based on the three-year average of the annual 4th-highest daily maximum eight-hour average concentration measured at each monitor within an area.

The NAAQS for particulates were revised in several respects. First, compliance with the current 24-hour PM_{10} standard will now be based on the 99th percentile of 24-hour concentrations at each monitor within an area. Two new $PM_{2.5}$ standards were added: a standard of 15 Fg/m^3, based on the three-year average of annual arithmetic means from single or multiple monitors (as available); and a standard of 65 Fg/m^3, based on the three-year average of the 98th percentile of 24-hour average concentrations at each monitor within an area.

Recent court decisions have delayed the implementation of these new standards.

TABLE 8.1-1
Ambient Air Quality Standards

Pollutant	Averaging Time	California	National
Ozone	1hour	0.09 ppm	0.12 ppm
	8 hours	-	0.08 ppm (3-year average of annual 4th-highest daily maximum)
Carbon Monoxide	8 hours	9.0 ppm	9 ppm
	1 hour	20 ppm	35 ppm
Nitrogen Dioxide	Annual Average	-	0.053 ppm
	1 hour	0.25 ppm	-
Sulfur Dioxide	Annual Average	-	80 µg/m^3 (0.03 ppm)
	24 hours	0.04 ppm (105 µg/m^3)	365 µg/m^3 (0.14 ppm)
	3 hours	-	1300(1) µg/m^3 (0.5 ppm)
	1 hour	0.25 ppm	-
Suspended Particulate Matter (10 Micron)	Annual Geometric Mean	30 µg/m^3	-
	24 hours	50 µg/m^3	150 µg/m^3
	Annual Arithmetic Mean	-	50 µg/m^3
Suspended Particulate Matter (2.5 Micron)	Annual Arithmetic Mean	-	15 µg/m^3 (3-year average)
	24 hours	-	65 µg/m^3 (3-year average of 98th percentiles)
Sulfates	24 hours	25 µg/m^3	-
Lead	30 days	1.5 µg/m^3	-
	Calendar Quarter	-	1.5 µg/m^3
Hydrogen Sulfide	1-hour	0.03 ppm	-
Vinyl Chloride	24-hour	0.010 ppm	-
Visibility Reducing Particles	8-hour (10am to 6pm PST)	In sufficient amount to produce an extinction coefficient of 0.23 per kilometer due to particles when the relative humidity is less than 70 percent.	-

[1] This is a national secondary standard, which is designed to protect public welfare.

8.1.3 Existing Air Quality

To characterize existing air quality at the project site, ambient air quality readings were taken from air monitoring stations in San Jose and from the Arkansas Street, San Francisco air monitoring station. Both stations are operated by the BAAQMD. They were used because of their proximity to the project site and because they record area-wide ambient conditions rather than the localized impacts of any particular facility.[4] All ambient air quality data presented in this section were taken from CARB publications and data sources. Ambient concentrations of ozone, carbon monoxide (CO), nitrogen dioxide (NO_2), fine particulate matter (PM_{10}), ultrafine particulate matter ($PM_{2.5}$), and airborne lead are recorded at the 4th Street monitoring station in San Jose, about 7 miles (11 km) south-southeast of the project site. Sulfur dioxide (SO_2) is monitored at the Arkansas Street station in San Francisco. Particulate sulfates were monitored at the Tully Road station in San Jose, about 13 miles

(21 km) south-southeast of the project site. Table 8.1-2 summarizes the most recent four years of available ambient monitoring data to characterize existing air quality in the project area.[5]

TABLE 8.1-2
Background Air Quality Data

Pollutant[1]		1997	1998	1999	2000	Applicable Air Quality Standard
Ozone	Highest 1-hr Avg (ppm)	0.094	0.147	0.109	0.073	0.09 (state) 0.12 (federal)
	# of days exceeding state standard	0	4	3	0	--
	# of days exceeding federal standard	0	1	0	0	--
Nitrogen Dioxide	Highest 1-hr Avg (ppm)	0.118	0.083	0.128	0.114	0.25 (state)
	Highest Annual Avg Conc (ppm)	0.025	0.025	0.026	0.023	0.053 (state)
Carbon Monoxide	Highest 1-hr Avg Conc (ppm)	9.9	8.6	9.0	8.9	20 (state) 35 (federal)
	Highest 8-hr Avg Conc (ppm)	6.11	6.27	6.28	3.71	9.0 (state) 9 (federal)
Sulfur Dioxide[2]	Highest 24-hr Avg Conc (ppm)	0.007	0.005	0.007	0.006	0.04 (state) 0.14 (federal)
	Annual Avg Conc (ppm)	0.001	0.001	0.002	0.002	0.03 (federal)
PM_{10}	24-hr Avg Conc (ug/m^3)	78.0	92.0	114.4	40	50 (state) 150 (federal)
	# of days exceeding state standard	3	3	5	0	--

4 A more extensive discussion of why the data from these stations are considered to be representative of air quality in the vicinity of the proposed project is provided in Section 8.1.5.3.1.

5 Data for 2000 are included here but are still considered by the agencies to be preliminary.

TABLE 8.1-2
Background Air Quality Data

Pollutant[1]		1997	1998	1999	2000	Applicable Air Quality Standard
	Annual Avg Conc (ppm)	23.7 25.8	22.5 25.0	25.4 28.7	14.2 15.7	30 (state) 50 (federal)
$PM_{2.5}$ [3]	24-hr Avg Conc (ug/m^3)	47	83	59	n/a	65 ug/m^3 (3-year average of 98th percentiles)
	Annual Avg Conc (ug/m^3)	11.0	10.8	14.5	n/a	15 ug/m^3 (3-year average)
Particulate Sulfates [4]	24-hr Avg Conc (ug/m^3)	6.9	3.7	6.7	n/a	25 (state)
Lead	Monthly Avg (ug/m^3)	0.01	0.01	n/a	n/a	1.5 (state)

1 All readings except sulfur oxide and sulfates from 4th Street monitoring station, San Jose.
2 Monitored at San Francisco (Arkansas Street).
3 The $PM_{2.5}$ data are derived from the dichotomous sampler and not from a Federal Reference Method $PM_{2.5}$ sampler. CARB indicates that this information should not be used for a regulatory comparison to the national $PM_{2.5}$ standards.
4 Monitored at Tully Road in San Jose.

8.1.3.1 Ozone

Ozone is generated by complex reactions between precursor organic compounds (POC) and oxides of nitrogen (NOx) in the presence of ultraviolet radiation. POC and NOx emissions from vehicles and stationary sources, in combination with daytime wind flow patterns, mountain barriers, a persistent temperature inversion, and intense sunlight, result in high ozone concentrations during the summer months. Based upon ambient air measurements at stations throughout the area, the San Francisco Bay Area Air Basin is classified as a nonattainment area for both state and federal ozone standards.

Maximum ozone concentrations at the San Jose station are usually recorded during the summer months. The data in Table 8.1-2 show that the state ozone air quality standard was exceeded a few times in 1998 and 1999. The federal standard was exceeded only once in this period.

8.1.3.2 Nitrogen Dioxide

Nitrogen dioxide is formed primarily from reactions in the atmosphere between nitric oxide (NO) and oxygen or ozone. Nitric oxide is formed during high-temperature combustion processes, when the nitrogen and oxygen in the combustion air combine. Although NO is much less harmful than NO_2, it is converted to NO_2 in the atmosphere within a matter of hours, or even minutes under certain conditions. For purposes of state and federal air quality planning, the San Francisco Bay Area Air Basin is in attainment for NO_2.

The data in Table 8.1-2 show that there have been no violations of either the state one-hour standard (0.25 ppm) or the federal annual average standard (0.053 ppm). Maximum one-hour NO_2 levels in San Jose have been well below the state standard of 0.25 ppm for many years.

8.1.3.3 Carbon Monoxide

Carbon monoxide (CO) is a product of inefficient combustion, principally from automobiles and other mobile sources of pollution. In many areas of California, CO emissions from wood-burning stoves and fireplaces can also be measurable contributors. Industrial sources generally contribute less than 10 percent of ambient CO levels. Peak CO levels occur typically during winter months, due to a combination of higher emission rates and stagnant weather conditions. For purposes of state and federal air quality planning, the San Francisco Bay Area Air Basin is classified as being in attainment for CO.

The data in Table 8.1-2 show that the maximum one-hour and eight-hour average concentrations in the project area are well below the California and federal air quality standards for CO.

8.1.3.4 Sulfur Dioxide

Sulfur dioxide (SO_2) is produced when any sulfur-containing fuel is burned. It is also emitted by chemical plants that treat or refine sulfur or sulfur-containing chemicals. Natural gas contains a negligible amount of sulfur, while fuel oils contain much larger amounts. Because of the complexity of the chemical reactions that convert SO_2 to other compounds (such as sulfates), peak concentrations of SO_2 occur at different times of the year in different parts of California, depending on local fuel characteristics, weather, and topography. The San Francisco Bay Area Air Basin is considered to be in attainment for SO_2 for purposes of state and federal air quality planning.

The data in Table 8.1-2 show that maximum 24-hour and annual average concentrations are generally an order of magnitude below the applicable standards.

8.1.3.5 Particulate Sulfates

Particulate sulfates are the product of further oxidation of SO_2. Elevated levels can also result from natural causes, such as sea spray in coastal areas. The San Francisco Bay Area Air Basin is in attainment with the state standard for sulfates. There is no federal standard for sulfates.

The data in Table 8.1-2 show that maximum 24-hour average sulfate levels in the project area are generally less than 20 percent of the state standard.

8.1.3.6 Fine Particulates (PM_{10} and $PM_{2.5}$)

Particulates in the air are caused by a combination of wind-blown fugitive dust; particles emitted from combustion sources (usually carbon particles); and organic, sulfate, and nitrate aerosols formed in the air from emitted hydrocarbons, sulfur oxides, and NOx, respectively. In 1984, the CARB adopted standards for fine particulates and phased out the total suspended particulate (TSP) standards that had been in effect until then. PM_{10} standards were substituted for TSP standards because PM_{10} corresponds to the size range of inhalable particulates related to human health. In 1987, EPA also replaced national TSP standards with PM_{10} standards. For air quality planning purposes, San Francisco Bay Area Air Basin is considered to be in attainment of federal PM_{10} standards, but in nonattainment of state standards.

As discussed above, the NAAQS for particulates were further revised by EPA with new standards that went into effect on September 16, 1997. In light of recent court decisions, EPA will delay implementation of the new $PM_{2.5}$ standards for an indefinite period.

Table 8.1-2 shows the federal and state air quality standards for PM_{10}, maximum levels, and geometric and arithmetic annual averages recorded at San Jose during the past four years. Maximum 24-hour PM_{10} levels occasionally exceed the state standard, but are consistently lower than the new federal standard based on 99th percentile concentrations. Annual average PM_{10} levels meet both state and federal standards.

For $PM_{2.5}$ the highest 24-hour average reading recorded was 83 $\mu g/m^3$ in 1998, which is above the federal standard (65 $\mu g/m^3$) that will be applied to the three-year average 98th percentile reading. The highest 98th percentile reading for the period is 59.0 ug/m^3 in 1999, while the three-year average 98th percentile is 33.0. The $PM_{2.5}$ readings are taken using a dichotomous sampler and not from a Federal Reference Method sampler. Thus, CARB cautions that these readings should not be used for a regulatory comparison to the national $PM_{2.5}$ standards.

8.1.3.7 Airborne Lead

Lead in the air results from the combustion of fuels that contain lead. Twenty-five years ago, motor vehicle gasolines contained relatively large amounts of lead compounds used as octane-rating improvers, and ambient lead levels were relatively high. Beginning with the 1975 model year, manufacturers began equipping new automobiles with exhaust catalysts, which were poisoned by the exhaust products of leaded gasoline. Thus, unleaded gasoline became the required fuel for an increasing fraction of new vehicles, and the phaseout of leaded gasoline began. As a result, ambient lead levels decreased dramatically, and for many years the San Francisco Bay Area Air Basin has been in attainment of state airborne lead levels for air quality planning purposes.

As shown in Table 8.1-2, maximum monthly lead levels in San Jose are well below the state standard.

8.1.4 Affected Environment

The USEPA has responsibility for enforcing, on a national basis, the requirements of many of the country's environmental and hazardous waste laws. California is under the jurisdiction of USEPA Region IX, which has its offices in San Francisco. Region IX is responsible for the local administration of USEPA programs for California, Arizona, Nevada, Hawaii, and certain Pacific trust territories. USEPA's activities relative to the California air pollution control program focus principally on reviewing California's submittals for the State Implementation Plan (SIP). The SIP is required by the federal Clean Air Act to demonstrate how all areas of the state will meet the national ambient air quality standards within the federally specified deadlines (42 USC Section 7409, 7411).

The CARB was created in 1968 by the Mulford-Carrell Air Resources Act, through the merger of two other state agencies. CARB's primary responsibilities are to develop, adopt, implement, and enforce the state's motor vehicle pollution control program; to administer and coordinate the state's air pollution research program; to adopt and update as necessary the state's ambient air quality standards; to review the operations of the local air pollution control districts; and to review and coordinate preparation of the SIP for achievement of the federal ambient air quality standards (California Health & Safety Code [H&SC] Section 39500 et seq.).

When the state's air pollution statutes were reorganized in the mid-1960s, local air pollution control districts (APCDs) were required to be established in each county of the state (H&SC Section 4000 et seq.). There are three different types of districts: county, regional, and unified. In addition, special air quality management districts (AQMDs), with more comprehensive authority over non-vehicular sources as well as transportation and other regional planning responsibilities, have been established by the Legislature for several regions in California, including the San Francisco Bay Area (H&SC Section 40200 et seq.).

Air pollution control districts and air quality management districts in California have principal responsibility for:

- developing plans for meeting the state and federal ambient air quality standard;
- developing control measures for non-vehicular sources of air pollution necessary to achieve and maintain both state and federal air quality standards;
- implementing permit programs established for the construction, modification, and operation of sources of air pollution; and
- enforcing air pollution statutes and regulations governing non-vehicular sources; and for developing employer-based trip reduction programs.

Each level of government has adopted specific regulations that limit emissions from stationary combustion sources, several of which are applicable to this project. The other agencies having permitting authority for this project are shown in Table 8.1-3. The applicable federal laws, ordinances, regulations and standards (LORS) and compliance with these requirements are discussed in more detail in the following sections. An application for a Determination of Compliance will be filed with the BAAQMD at approximately the same time as the Application for Certification (AFC) is filed with the Commission.

TABLE 8.1-3
Air Quality Agencies

Agency	Authority	Contact
USEPA Region IX	Oversight of permit issuance, enforcement	Gerardo Rios, Chief Permits Office USEPA Region IX 75 Hawthorne Street San Francisco, CA 94105 (415) 744-1259
California Air Resources Board	Regulatory oversight	Mike Tollstrup, Chief Project Assessment Branch California Air Resources Board 2020 L Street Sacramento, CA 95814 (916) 322-6026
Bay Area Air Quality Management District	Permit issuance, enforcement	William deBoisblanc, Director of Permit Services Bay Area Air Quality Management District 939 Ellis Street San Francisco, CA 94109 (415) 749-4707

8.1.4.1 Laws, Ordinances, Regulations, and Standards (LORS)

8.1.4.1.1 Federal

Prevention of Significant Deterioration Program

Authority: Clean Air Act Section 160-169A, 42 USC Section 7470-7491; 40 CFR Parts 51 and 52

Requirements: Requires prevention of significant deterioration (PSD) review and facility permitting for construction of new or modified major stationary sources of air pollution. PSD review applies with respect to attainment pollutants for which ambient concentrations are lower than the corresponding NAAQS. The following federal requirements apply on a pollutant-by-pollutant basis, depending on facility emission rates.

- Emissions must be controlled using Best Available Control Technology (BACT).
- Air quality impacts in combination with other increment-consuming sources must not exceed maximum allowable incremental increases for SO_2, PM_{10}, and NOx.
- Air quality impacts of all sources in the area plus ambient pollutant background levels cannot exceed NAAQS.
- Pre- and/or post-construction air quality monitoring may be required.
- The air quality impacts on soils, vegetation, and nearby PSD Class I areas (specific national parks and wilderness areas) must be evaluated. (Note: The LECEF project is located in a Class II area.)

PSD review jurisdiction has been delegated to the BAAQMD for all pollutants and is discussed further below under local LORS and conformance.

Administering Agency: BAAQMD, with USEPA Region IX oversight.

New Source Review

Authority: Clean Air Act Section 171-193, 42 USC Section 7501 et seq.; 40 CFR Parts 51 and 52

Requirement: Requires new source review (NSR) facility permitting for construction or modification of specified stationary sources. NSR applies with respect to nonattainment pollutants for which ambient concentration levels are higher than the corresponding NAAQS. The following federal requirements apply on a pollutant-by-pollutant basis, depending on facility emission rates.

- Emissions must be controlled to the lowest achievable emission rate (LAER).
- Sufficient offsetting emissions reductions must be obtained following the requirements in the regulations to continue reasonable further progress toward attainment of applicable NAAQS.
- The owner or operator of the new facility has demonstrated that major stationary sources owned or operated by the same entity in California are in compliance or on schedule for compliance with applicable emissions limitations in this rule.
- The administrator must find that the implementation plan has been adequately implemented.

- An analysis of alternatives must show that the benefits of the proposed source significantly outweigh any environmental and social costs.

New source review jurisdiction has been delegated to the BAAQMD for all pollutants and is discussed further under local LORS and conformance below.

Administering Agency: BAAQMD, with USEPA Region IX oversight.

Acid Rain Program
Authority: Clean Air Act Section 401 (Title IV), 42 USC Section 7651

Requirement: Requires the reduction of the adverse effects of acid deposition through reductions in emissions of sulfur dioxide and nitrogen oxides. BAAQMD has received delegation authority to implement Title IV.

Administering Agency: BAAQMD, with USEPA Region IX oversight.

Title V Operating Permits Program
Authority: Clean Air Act Section 501 (Title V), 42 USC Section 7661

Requirements: Establishes comprehensive operating permit program for major stationary sources. BAAQMD has received delegation authority for this program.

Administering Agency: BAAQMD, with USEPA Region IX oversight.

National Standards of Performance for New Stationary Sources
Authority: Clean Air Act Section 111, 42 USC Section 7411; 40 CFR Part 60

Requirements: Establishes national standards of performance for new stationary sources. These standards are enforced at the local level with USEPA oversight. Relevant new stationary source performance standards are discussed under local LORS below.

Administering Agency: BAAQMD, with USEPA Region IX oversight.

National Emission Standards for Hazardous Air Pollutants
Authority: Clean Air Act Section 112, 42 USC Section 7412

Requirements: Establishes national emission standards for hazardous air pollutants. These standards are enforced at the local level with USEPA oversight and are further discussed under local LORS and conformance below.

Administering Agency: BAAQMD, with USEPA Region IX oversight.

8.1.4.1.2 State

Nuisance Regulation
Authority: CA Health & Safety Code Section 41700

Requirements: Provides that "no person shall discharge from any source whatsoever such quantities of air contaminants or other material which causes injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause injury or damage to business or property."

Administering Agency: BAAQMD and CARB.

Toxic "Hot Spots" Act
Authority: H& SC Section 44300-44384; 17 CCR Section 93300-93347

Requirements: Requires preparation and biennial updating of inventory of facility emissions of hazardous substances listed by CARB, in accordance with CARB's regulatory guidelines. Risk assessments are to be prepared by facilities required to submit emissions inventories according to local priorities.

Administering Agency: BAAQMD and CARB.

CEC and CARB Memorandum of Understanding
Authority: CA Pub. Res. Code Section 25523(a); 20 CCR Section 1752, 1752.5, 2300-2309 and Div. 2, Chap. 5, Art. 1, Appendix B, Part (k)

Requirements: Provides for the inclusion of requirements in the CEC's decision on an application for certification to assure protection of environmental quality; application is required to include information concerning air quality protection.

Administering Agency: California Energy Commission.

8.1.4.1.3 Local
District Regulations and Policies
Authority: CA Health & Safety Code Section 40001

Requirements: Prohibit emissions and other discharges (such as smoke and odors) from specific sources of air pollution in excess of specified levels.

Administering Agency: BAAQMD, with CARB oversight.

8.1.4.2 Conformance of Facility

As addressed in this section, LECEF is designed, and will be constructed and operated, in accordance with all relevant federal, state, and local requirements and policies concerning protection of air quality.

8.1.4.2.1 Federal and Bay Area Air Quality Management District Prevention of Significant Deterioration Program

USEPA has promulgated PSD regulations for areas that are in compliance with national ambient air quality standards (40 CFR 52.21). The PSD program allows new sources of air pollution to be constructed, or existing sources to be modified, while preserving the existing ambient air quality levels, protecting public health and welfare, and protecting Class I areas (e.g., specific national parks and wilderness areas). USEPA has delegated the authority to implement the PSD program to various California air pollution control districts, including the BAAQMD where LECEF is located (40 CFR 52.21(u)).

The five principal areas of the federal PSD program are as follows:

- Applicability
- Best available control technology
- Pre-construction monitoring
- Increments analysis
- Air quality impact analysis

The PSD requirements apply on a pollutant-specific basis to any project that is a new major stationary source or a major modification to an existing stationary source. (These terms are defined in federal regulations.) (40 CFR 52.21) The determination of applicability is based on evaluating the emissions changes associated with the proposed project in addition to all other emissions changes at the same location since the applicable PSD baseline dates (40 CFR 52.21).

Under the BAAQMD PSD program (Regulation 2, Rule 2), best available control technology (BACT) must be applied when a new or modified source shows emission increases in excess of 10 pounds per highest day of precursor organic compounds (POC), nonprecursor organic compounds (NPOC), NOx, SO_2, PM_{10}, or CO. The BAAQMD program also dictates that a permit for a project will be denied if specified emissions thresholds are exceeded unless air dispersion modeling shows that ambient air quality standards will not be violated and the applicable PSD increments, as defined in the PSD rule, will not be exceeded. The BAAQMD PSD emission threshold levels for requiring modeling are shown in Table 8.1-4. The PSD modeling requirements apply to all major facilities with cumulative increases in emissions that exceed the levels shown in Table 8.1-4 on a pollutant-specific basis since the applicable PSD baseline date.

TABLE 8.1-4
BAAQMD PSD Emission Threshold Levels

Pollutant	Threshold Level
PM_{10}	15 tpy*
NOx	40 tpy
SO_2	40 tpy
POC	40 tpy
CO	100 tpy

* tpy: tons per year

The BAAQMD PSD program applies, on a pollutant-specific basis, only to a new major stationary source or to a major modification of an existing major stationary source that meets the following criteria:

- A new facility that will emit 100 tons per year (tpy) or more, and is one of the 28 PSD source categories in the federal Clean Air Act or any new facility that will emit 250 tpy or more; or
- A facility that emits 100 tpy or more with net emissions increases since the applicable PSD baseline date that exceed the threshold levels shown in Table 8.1-4.

8.1.4.2.2 Federal New Source Performance Standards

The Standards of Performance for New Stationary Sources are source-specific federal regulations, limiting the allowable emissions of criteria pollutants (i.e., those that have a national ambient air quality standard). These regulations apply to certain sources depending on the equipment size, process rate, and / or the date of construction, modification, or reconstruction of the affected facility. Recordkeeping, reporting, and monitoring requirements are usually necessary for the regulated pollutants from each subject source; the reports must be regularly submitted to the reviewing agency (40 CFR 60.4). As with the PSD program, this program has been delegated by USEPA to the BAAQMD. A summary of the BAAQMD New Source Performance Standards applicable to the project is provided in Section 8.1.4.2.9.

8.1.4.2.3 National Emissions Standards for Hazardous Air Pollutants

The National Emissions Standards for Hazardous Air Pollutants (NESHAPs) are either source-specific or pollutant-specific regulations, limiting the allowable emissions of hazardous air pollutants from the affected sources (40 CFR 61). Unlike criteria air pollutants, hazardous air pollutants do not have a national ambient air quality standard but have been identified by USEPA as causing or contributing to the adverse health effects of air pollution.

Administration of the hazardous air pollutants program has been delegated to the BAAQMD (40 CFR 61.04) and is described in Section 8.1.4.2.10.

8.1.4.2.4 Federal Clean Air Act Amendments of 1990

In November 1990, substantial revisions and updates to the federal Clean Air Act were signed into law. This complex enactment addresses a number of areas that could be relevant to the proposed LECEF project, such as State Implementation Plan requirements for nonattainment areas that set new compliance deadlines and annual progress increments, more extensive permitting requirements, new USEPA mandates and deadlines for developing rules to control air toxic emissions, and acid deposition control. Following is a summary of the new provisions applicable to this project.

Title IV - Acid Deposition Control

This title requires the reduction of emissions of acidic compounds and their precursors (42 USC Section 7651 et seq.). The principal source of these compounds is the combustion of fossil fuels. Other requirements include monitoring and recordkeeping for emissions of SO_2 and NOx and for opacity and volumetric flow.

Title V - Operating Permits

This title establishes a comprehensive operating permit program for major stationary sources (42 USC Section 7661 et seq.). Under the Title V program, a single permit is required that includes a listing of all the stationary sources, applicable regulations, requirements, and compliance determination.

The BAAQMD’s Major Facility Review Program (Regulation 2, Rule 6) has been approved by USEPA and includes the acid rain program. Consequently, the BAAQMD has received delegation to implement the Title IV and V programs. The BAAQMD Title IV and V permit programs applicable to this project are summarized below.

8.1.4.2.5 California Clean Air Act

AB 2595, the California Clean Air Act (Act), was enacted by the California Legislature and became law in January 1989. The Act requires the local air pollution control districts to attain and maintain both the federal and state ambient air quality standards at the “earliest practicable date.” The Act contains several milestones for local districts and the California Air Resources Board. In 1993, the BAAQMD submitted to the Air Resources Board an air quality plan defining the program for meeting the required emission reduction milestones in the Bay Area. Several updates to the original plan have also been submitted.

Air quality plans must demonstrate attainment of the state ambient air quality standards and must result in a five percent annual reduction in emissions of nonattainment pollutants (ozone, CO, NOx, SO_2, and their precursors) in a given district (H&SC Section 40914). A local district may adopt additional stationary source control measures or transportation control measures, revise existing source-specific or new source review rules, or expand its vehicle inspection and maintenance program (H&SC Section 40918) as part of the plan. District air quality plans specify the development and adoption of more stringent regulations to achieve the requirements of the Act. The applicable regulations that will apply to LECEF are included in the discussion of BAAQMD prohibitory rules in Section 8.1.4.2.8.

8.1.4.2.6 BAAQMD New Source Review Requirements

BAAQMD Regulation 2, Rule 2, New Source Review, requires that a pre-construction review be conducted for all proposed new or modified sources of air pollution. New Source Review contains three principal elements:

- Best available control technology (BACT)
- Emissions offsets
- Air quality impact analysis

BACT is required for any source that has an increase in emissions of any criteria pollutant and that has a potential to emit in excess of 10 pounds per highest day. The district rule also contains separate BACT thresholds for nine “non-criteria” pollutants, such as lead and various sulfur compounds.

The BAAQMD regulation further requires that for new or modified sources emitting in excess of 50 tons per year of POCs or NOx, the total project emissions must be offset (i.e., an emission reduction comparable to the emission increase attributable to the source must be achieved at the project site or at another location). To ensure that there is no net increase in regional emissions as a result of new or modified sources, offsets at a ratio of 1.15 to 1.0 must be provided. For facilities emitting more than 15 but less than 50 tpy of POCs or NOx, offsets are provided by the District from the Small Facility Banking account at a ratio of 1.0 to 1.0.

In addition, a Major Facility (100 tpy facility) is required to offset net emissions increases from a project, on a pollutant-specific basis, in excess of 1 tpy of PM_{10} and SO_2 that have occurred or will occur after April 5, 1991.

For the BAAQMD, the air quality impact analysis is the same as the PSD requirement: the project must not cause a violation or interfere with the maintenance of any ambient air quality standards or applicable increments.

Finally, the district may impose appropriate monitoring requirements to ensure compliance.

District Regulation 2, Rule 3 specifies procedures for review and standards for approval of Authorities to Construct power plants within the District. The applicant must obtain a Determination of Compliance and an Authority to Construct from the District prior to commencing construction. An application for a Determination of Compliance and an Authority to Construct is expected to be filed with the BAAQMD within one week of the filing of the AFC with the CEC. As the USEPA has delegated permitting authority to the BAAQMD, no application to the USEPA is required for this project.

8.1.4.2.7 Risk Management Policy

The District has developed a procedure for reviewing permit applications for projects that will emit compounds that may result in health impacts. The procedure requires comparing the potential emissions of toxic air contaminants from the project to specific levels, and requires the preparation of a written risk screening analysis if the levels are exceeded. The screening analysis includes estimates of the maximum annual concentrations of the toxic air contaminants, calculations of cancer risk, and comparison of maximum modeled concentrations with appropriate non-cancer threshold levels. The use of best available control technology for toxic air contaminant emissions is required if the incremental cancer risk from the project is projected to be between 1 and 10 in 1 million.

8.1.4.2.8 Other BAAQMD Regulatory Requirements

As required by the federal Clean Air Act and the California Clean Air Act, plans that demonstrate attainment must be developed for those areas that have not attained the national and state air quality standards (42 USC Section 7401; H&SC Section 40912). As part of its plan, the BAAQMD has developed regulations limiting emissions from specific sources. These regulations are collectively known as "prohibitory rules," because they prohibit the construction or operation of a source of pollution that would violate specific emission limits.

The general prohibitory rules of the BAAQMD applicable to LECEF are as follows.

Regulation 1-301 - Public Nuisance

Prohibits emissions in quantities that adversely affect public health, other businesses, or property.

Regulation 6 - Particulate Matter and Visible Emissions

Limits the visible emissions from the project to no darker than No. 1 when compared to a Ringelmann Chart for a period or periods aggregating more than 3 minutes in any hour. Opacity is limited to no greater than 20 percent from any source for a period or periods aggregating 3 minutes in any hour. Particulate emission concentrations cannot exceed 0.15 grains per dry standard cubic foot (gr/dscf) of exhaust gas volume.

Regulation 7 - Odorous Substances

Limits emission concentrations of dimethylsulfide, ammonia, mercaptan, phenols, and trimethylamine. This regulation becomes applicable upon confirmation of 10 or more odor complaints from the public within a 90-day period. Once the rule becomes applicable, it remains in effect for one year and can be re-triggered with the receipt of 5 or more odor complaints within a 90-day period.

Regulation 9, Rule 1 - Sulfur Dioxide

Limits stationary source emissions of sulfur dioxide to less than 300 part per million (ppm). In addition, the rule restricts sulfur dioxide emissions that will result in ground-level concentrations in excess of 0.5 ppm continuously for 3 consecutive minutes, 0.25 ppm averaged over 60 consecutive minutes, or 0.05 ppm averaged over 24 hours.

Regulation 9, Rule 2 - Hydrogen Sulfide

Limits the emission of hydrogen sulfide during any 24-hour period in such quantities that result in ground-level hydrogen sulfide concentrations in excess of 0.06 ppm averaged over 3 consecutive minutes or 0.03 ppm averaged over any 60 consecutive minutes.

Regulation 9, Rule 3 - Nitrogen Oxides From Heat Transfer Operations

Limits emissions of nitrogen oxides from new or modified heat transfer operations to less than 125 ppm.

Regulation 9, Rule 9 - Nitrogen Oxides from Stationary Gas Turbines

Limits emissions of nitrogen oxides from gas turbines during baseload operations to less than 9 parts per million by volume (ppmv) corrected to 15 percent oxygen.

Regulation 11, Rule 10 - Hexavalent Chromium Emissions From Cooling Towers

Limits hexavalent chromium emissions from cooling towers by eliminating the use of chromium-based chemicals.

8.1.4.2.9 BAAQMD New Source Performance Standards

Regulation 10 (40 CFR 60 Subpart GG) - Standards of Performance for Stationary Gas Turbines. The BAAQMD has adopted by reference the federal New Source Performance Standard (NSPS) for stationary gas turbines. This regulation requires monitoring of sulfur and nitrogen in the fuel; limits emissions of NOx and SO_2 emissions; requires source testing of emissions; requires emissions monitoring; and requires recordkeeping for the collected data.

8.1.4.2.10 BAAQMD Hazardous Air Pollutants

EPA is in the process of establishing a Maximum Achievable Control Technology (MACT) standard for gas turbines. This regulation will apply to new or modified major sources of Hazard Air Pollutants (HAPs) (as listed in Section 112 of the Clean Air Act). Because the HAP emissions for the Project are below the major source thresholds of 10 tpy for a single HAP and 25 tpy for any combination of HAPs, the Project is exempt from the NESHAP for gas turbines. Consequently, this regulation does not apply to the Project and will not be addressed further. Please note that while Section 8.1.5.2.4 shows ammonia emissions greater than 25 tpy for the Project, ammonia is not a HAP as defined by Section 112 of the Clean Air Act.

8.1.4.2.11 BAAQMD Title IV and Title V Programs

BAAQMD Regulation 2, Rule 6 - Major Facility Review

This rule implements the operating permit requirements of Title V of the federal Clean Air Act. The rule applies to major facilities, Phase II acid rain facilities, subject solid waste incinerator facilities, and any facility listed by USEPA as requiring a Title V permit. As a Phase II acid rain facility, LECEF will be required to submit a permit application to undergo a major facility review within 12 months of commencement of facility operation.

The BAAQMD has adopted by reference the federal Title IV (Acid Rain) Regulation and is now responsible for implementing the program through the Title V operating permit program. Under Title IV, a project must comply with maximum operating emissions levels for SO_2 and NOx and is required to install and operate continuous monitoring systems for SO_2, NOx, and CO_2 emissions. Extensive recordkeeping and reporting requirements are also part of the acid rain program.

8.1.5 Environmental Impacts

8.1.5.1 Overview of the Analytical Approach to Estimating Facility Impacts

The new emissions sources at LECEF include four simple-cycle gas turbines, a 2-cell cooling tower, a natural gas-fueled emergency generator, and a Diesel-fueled fire pump. For the current phase of the project, the cooling tower will be used to chill turbine inlet air, which will increase power output under certain ambient conditions. If the second phase of the project (see Section 2.0) is pursued, additional cells will be added to the cooling tower to provide cooling for the future combined cycle plant. Each turbine will be equipped with water injection and a selective catalytic reduction (SCR) system for NOx control, and an oxidation catalyst for control of CO. Emissions control systems will be fully operational during all operations except startups and shutdowns. Maximum annual emissions are based on operation of the LECEF equipment at maximum firing rates.

Ambient air quality impact analyses for the facility have been conducted to satisfy the CEC requirements for impacts from criteria pollutants (NO_2, CO, $PM_{10,}$ and SO_2) and noncriteria pollutants during project construction and operation. The following sections describe the emission sources that have been evaluated, the results of the ambient impact analyses, and the evaluation of facility compliance with the applicable air quality regulations, including BAAQMD Regulation 2 (Permits). Regulation 2, Rule 2 includes the District's NSR and PSD requirements.

8.1.5.1.1 New Equipment

The proposed gas turbines are General Electric LM6000PC Sprint combustion gas turbines driving nominal 45 MW turbine generators. The combustion gas turbines will be fueled exclusively with natural gas. The combustion gas turbines will be equipped with water injection to control NOx emissions and inlet air chillers to maintain turbine output at elevated temperatures. Post-combustion air pollution controls will include SCR for NOx control and oxidation catalysts for CO control. The combustion gas turbines will be operated up to 24 hours per day, 7 days per week, 52 weeks per year. Specifications for the new combustion gas turbines are summarized in Table 8.1-6. A fuel analysis is summarized in Table 8.1-7.

A new two-cell cooling tower will be constructed adjacent to the turbines. The cooling tower will serve the condenser circuit heat rejection of the mechanical chillers used to chill the air entering the turbines. Specifications for the cooling tower are shown in Table 8.1-8.

TABLE 8.1-5
Laws, Ordinances, Regulations, Standards (LORS), and Permits for Protection of Air Quality

LORS	Purpose	Regulating Agency	Permit or Approval	Schedule and Status of Permit	Conformance (Section)
Federal					
Clean Air Act (CAA) Section 160-169A and implementing regulations, Title 42 United States Code (USC) Section 7470-7491, Title 40 Code of Federal Regulations (CFR) Parts 51 & 52. (Prevention of Significant Deterioration Program)	Requires prevention of significant deterioration (PSD) review and facility permitting for construction of new or modified major stationary sources of air pollution. PSD review applies to pollutants for which ambient concentrations are lower than NAAQS.	BAAQMD with USEPA oversight	After project review, issues Authority to Construct (ATC) with conditions limiting emissions.	Agency approval to be obtained before start of construction.	8.1.6.1, 8.1.4.2.1, Appendix 8.1E
CAA Section 171-193, 42 USC Section 7501 et seq. (New Source Review)	Requires new source review (NSR) facility permitting for construction or modification of specified stationary sources. NSR applies to pollutants for which ambient concentration levels are higher than NAAQS.	BAAQMD with USEPA oversight	After project review, issues ATC with conditions limiting emissions.	Agency approval to be obtained before start of construction.	8.1.6.1, 8.1.4.2.1, Appendices 8.1-5, 8.1-6
CAA Section 401 (Title IV), 42 USC Section 7651 (Acid Rain Program)	Requires reductions in NOx and SO2 emissions.	BAAQMD with USEPA oversight	Issues Acid Rain permit after review of application.	Application to be made within 12 months of start of facility operation.	8.1.4.2.4
CAA Section 501 (Title V), 42 USC Section 7661 (Federal Operating Permits Program)	Establishes comprehensive permit program for major stationary sources.	BAAQMD with USEPA oversight	Issues Title V permit after review of application.	Application to be made within 12 months of start of facility operation.	8.1.4.2.4
CAA Section 111, 42 USC Section 7411, 40 CFR Part 60 (New Source Performance Standards - NSPS)	Establishes national standards of performance for new stationary sources.	BAAQMD with USEPA oversight	After project review, issues ATC with conditions limiting emissions.	Agency approval to be obtained before start of construction.	8.1.6, 8.1.4.2.2
CAA Section 112, 42 USC Section 7412, 40 CFR Part 63 (National Emission Standards for Hazardous Air Pollutants - NESHAPs)	Establishes national emission standards for hazardous air pollutants.	BAAQMD with USEPA oversight	After project review, issues ATC with conditions limiting emissions.	Agency approval to be obtained before start of construction.	8.1.6, 8.1.4.2.3
State					
California Health & Safety Code (H&SC) Section 41700 (Nuisance Regulation)	Outlaws discharge of such quantities of air contaminants that cause injury, detriment, nuisance, or annoyance.	BAAQMD with CARB oversight	After project review, issues ATC with conditions limiting emissions.	Agency approval to be obtained before start of construction.	8.1.4.1.2

TABLE 8.1-5
Laws, Ordinances, Regulations, Standards (LORS), and Permits for Protection of Air Quality

LORS	Purpose	Regulating Agency	Permit or Approval	Schedule and Status of Permit	Conformance (Section)
H&SC Section 44300-44384; California Code of Regulations (CCR) Section 93300-93347 (Toxic "Hot Spots" Act)	Requires preparation and biennial updating of facility emission inventory of hazardous substances; risk assessments.	BAAQMD with CARB oversight	After project review, issues ATC with conditions limiting emissions.	Screening HRA submitted before start of construction.	8.1.5.4, 8.1.4.1.2, Appendix 8.1C
California Public Resources Code Section 25523(a); 20 CCR Section 1752, 2300-2309 (CEC & CARB Memorandum of Understanding)	Requires that CEC's decision on AFC include requirements to assure protection of environmental quality; AFC required to address air quality protection.	CEC	After project review, issues Final Determination of Compliance (FDOC) with conditions limiting emissions.	CEC approval of AFC, i.e., FDOC, to be obtained before start of construction.	8.1.4.1.2
Local					
BAAQMD Regulation 1 Section 301(Public Nuisance)	Prohibits emissions in quantities that adversely affect public health, other businesses, or property.	BAAQMD with CARB oversight	After project review, issues ATC with conditions limiting emissions.	Agency approval to be obtained before start of construction.	8.1.6.3, 8.1.4.2.8
BAAQMD Regulation 2 (Permits), Rule 2 (New Source Review)	NSR and PSD: Requires that preconstruction review be conducted for all proposed new or modified sources of air pollution, including BACT, emissions offsets, and air quality impact analysis.	BAAQMD with CARB oversight	After project review, issues ATC with conditions limiting emissions.	Agency approval to be obtained before start of construction.	8.1.5.1, 8.1.5.2, 8.1.5.3, 8.1.5.4, 8.1.6.3, 8.1.4.2.6, Appendices 8.1-2, 8.1-5, 8.1-6
BAAQMD Regulation 2, Rule 6 (Major Facility Review)	Implements operating permits requirements of CAA Title V and acid rain regulations of CAA Title IV.	BAAQMD	Issues Title V permit after review of application.	Application to be made within 12 months of start of facility operation.	8.1.6.1, 8.1.4.2.4, 8.1.4.2.11
BAAQMD Regulation 6 (Particulate Matter and Visible Emissions)	Limits visible emissions to no darker than Ringelmann No. 1 for periods greater than 3 minutes in any hour; limits PM emissions to 0.15 gr/dscf.	BAAQMD with CARB oversight	After project review, issues ATC with conditions limiting emissions.	Agency approval to be obtained before start of construction.	8.1.6.3, 8.1.4.2.8
BAAQMD Regulation 7 (Odorous Substances)	Limits emissions of dimethylsulfide, ammonia, mercaptan, phenols, and trimethylamine; becomes applicable upon confirmation of 10 or more odor complaints with 90 days.	BAAQMD with CARB oversight	After project review, issues ATC with conditions limiting emissions.	Agency approval to be obtained before start of construction.	8.1.6.3, 8.1.4.2.8
BAAQMD Regulation 9, Rule 1 (Sulfur Dioxide)	Limits SO_2 emissions to <300 ppm; also limits SO_2 emissions resulting in ground level concentrations of specified level and duration.	BAAQMD with CARB oversight	After project review, issues ATC with conditions limiting emissions.	Agency approval to be obtained before start of construction.	8.1.6.3, 8.1.4.2.8

TABLE 8.1-5
Laws, Ordinances, Regulations, Standards (LORS), and Permits for Protection of Air Quality

LORS	Purpose	Regulating Agency	Permit or Approval	Schedule and Status of Permit	Conformance (Section)
BAAQMD Regulation 9, Rule 2 (Hydrogen Sulfide)	Limits H_2S emissions during any 24-hour period that result in ground level H_2S concentrations exceeding specified levels and durations.	BAAQMD with CARB oversight	After project review, issues ATC with conditions limiting emissions.	Agency approval to be obtained before start of construction.	8.1.6.3, 8.1.4.2.8
BAAQMD Regulation 9, Rule 3 (Heat Transfer Operation NOx Emissions Limits)	Limits NOx emissions from new heat transfer operations 250 Million British Thermal Units per hour (MMBtu/hr) maximum to <125 ppm.	BAAQMD with CARB oversight	After project review, issues ATC with conditions limiting emissions.	Agency approval to be obtained before start of construction.	8.1.6.3, 8.1.4.2.8
BAAQMD Regulation 9, Rule 9 (Nitrogen Oxides from Stationary Gas Turbines)	Limits NOx emissions during baseload operations to 9 ppmv @ 15 percent exhaust oxygen (15 ppmv if SCR is not used).	BAAQMD with CARB oversight	After project review, issues ATC with conditions limiting emissions.	Agency approval to be obtained before start of construction.	8.1.6.3, 8.1.4.2.8
BAAQMD Regulation 10 (40 CFR 60 Subpart GG) (Standards of Performance for Stationary Gas Turbines)	Requires monitoring of fuel, other operating parameters; limits NO_x and SO_2 emissions, requires source testing, emissions monitoring, and recordkeeping.	BAAQMD with CARB oversight	After project review, issues ATC with conditions limiting emissions.	Agency approval to be obtained before start of construction.	8.1.6.3, 8.1.4.2.8
BAAQMD Regulation 11, (Hazardous Pollutants)	Implements federal NESHAP regulations.	BAAQMD with CARB oversight	After project review, issues ATC with conditions limiting emissions.	Agency approval to be obtained before start of construction.	8.1.4.1.1, 8.1.4.2.3

A natural gas-fueled emergency generator and a Diesel-fueled fire pump engine will also be part of the project. Specifications for these units are provided in Tables 8.1-9 and 8.1-10, respectively.

Engineering specifications for the turbines are contained in Appendix 8.1A, Table 8.A-1.

TABLE 8.1-6
New LM6000PC Combustion Gas Turbine Design Specifications

Manufacturer	General Electric
Model	LM6000PC
Fuel	Natural gas
Design Ambient Temperature [1]	29 °F
Nominal Heat Input Rate	472.6 MMBtu/hr @ HHV
Nominal Power Generation Rate	45 MW
Nominal Exhaust Temperature	850 °F
Exhaust Flow Rate	600,630 actual cubic feet per minute (acfm)
Exhaust O_2 Concentration, dry volume	14.65%
Exhaust CO_2 Concentration, dry volume	3.65%
Exhaust Moisture Content, wet volume	9.86%
Emission Controls	Water Injection and SCR (5 ppmv NOx @ 15% O_2) Oxidation Catalyst (6 ppmv CO @ 15% O_2)

[1] Low-temperature scenario

TABLE 8.1-7
Nominal Fuel Properties – Natural Gas

Component Analysis		Chemical Analysis	
Component	**Average Concentration, Volume**	**Constituent**	**Percent by Weight**
CH_4	95.62 %	Carbon	73.53%
C_2H_6	2.65 %	Hydrogen	24.13%
C_3H_8	0.30%	Nitrogen	1.36%
C_4H_{10}	0.08%	Oxygen	0.98%
C_5H_{12}	0.02%	Sulfur	4 ppm
N_2	0.82 %	Higher Heating Value	1022 British thermal units/stand cubic feet (Btu/scf)
CO_2	0.52 %		23,171 British thermal units per pound (Btu/lb)
S	<0.00%		

TABLE 8.1-8
Cooling Tower Specifications

Parameter	Value
Water Flow Rate, 10 million pounds per hour (lbm/hr)	8.0
Water Flow Rate, gallons per minute (gal/min)	16,000
Drift Rate, %	0.0005
Exhaust Flow Rate, ft^3/min (per cell, two cells)	962,900

TABLE 8.1-9
Natural Gas-Fired Emergency Generator Specifications

Parameter	Value
Manufacturer	Caterpillar
Model	G3512 90 LE
Rated Output, kilowatts (kW) (standby rating)	600
Rated Output, brake horsepower (bhp)	804
Fuel Consumption Rate, MMbtu/hr	6.44

TABLE 8.1-10
Diesel Fire Pump Engine Specifications

Parameter	Value
Manufacturer	Detroit Diesel-Allison
Model	DDFP-06FA
Rated Output, bhp	368
Fuel Consumption Rate, MMBtu/hr	20.0

8.1.5.1.2 Facility Operations

New LM6000PC Simple Cycle Gas Turbines

General Electric provided turbine performance specifications for three temperature scenarios—high temperature (95°F), average temperature (59.9°F), and low temperature (29°F). The low-temperature scenario was used to characterize maximum emissions because it has the highest hourly heat input and emission rates. Daily operations are based on full-load operation of four turbines for 24 hours. Annual emissions are based on full-load operation of each turbine for 8760 hours per year. Operating conditions, as summarized in

Table 8.1-11, were established to provide the basis for the calculation of project and facility emissions.

TABLE 8.1-11
LM6000PC Combustion Gas Turbine Operations

Interval	Heat Input, MMBtu (HHV)	
	Each Turbine	Total, Four Turbines
Hourly	472.6	1,890.4
Daily	11,342.4	45,369.6
Annual	4,139,976	16,559,904

New Cooling Tower

The cooling tower will operate when inlet air chilling is necessary to maintain turbine output. For this application, the cooling tower is assumed to operate 24 hours per day, 8760 hours per year.

Emergency Generator and Diesel Fire Pump Engine

The emergency generator and fire pump engine will be operated only for testing and emergency purposes. Maximum operations will be one hour per day and 200 hours per year for the emergency generator and 45 minutes per day and 100 hours per year for the fire pump engine. The engines will not be tested on the same day.

8.1.5.2 Emissions Assessment: Criteria Pollutants

Criteria pollutants emitted from the combustion gas turbines and emergency equipment include NOx, sulfur oxides (SOx), CO, POCs and particulate matter less than 10 microns in diameter (PM_{10}). The cooling tower will emit only small quantities of PM_{10}. This section of the application presents calculated emissions from the new equipment.

The combustion gas turbines also will emit trace levels of toxic air contaminants (TACs), including ammonia. This section also presents the maximum TAC emissions from the proposed combustion gas turbines. Tables containing the detailed emission calculations are contained in Appendix 8.1A.

8.1.5.2.1 Criteria Pollutant Emissions: LM6000PC Combustion Gas Turbines

Proposed maximum emissions from the LM6000PC combustion gas turbines were estimated on an hourly, daily, and annual basis.

Emissions of NOx, CO, and POC were calculated from emission limits (in ppmv at 15 percent O_2) and the exhaust flow rates. The NOx emission limit reflects the application of SCR. The POC emission limit reflects the use of good combustion practices. The CO emission limit reflects the expected performance of the oxidation catalyst. Maximum emissions were based on the exhaust rate (224,309 dry standard cubic feet per minute [dscfm] at 15 percent O_2) associated with the heat input rates shown in Table 8.1-2.

SOx emissions were calculated from the heat input (in MMBtu) and a SOx emission factor (in lb / MMBtu). The SOx emission factor of 0.0007 lb / MMBtu was derived from the expected fuel sulfur content of 4 ppm by weight. Maximum SOx emissions were calculated using the heat input rates in Table 8.1-2.

Maximum hourly PM_{10} emissions were obtained from manufacturer's guarantees for LM6000 combustion gas turbines in previous applications.

Total emissions for all four LM6000PC combustion gas turbines are summarized in Table 8.1-12. The BACT analysis upon which the emission factors are based is presented in Appendix 8.1E and is summarized in Section 8.1.6.3.

TABLE 8.1-12
Proposed Maximum Emissions – LM6000PC Combustion Gas Turbines

	Maximum Emissions				
	NOx	**SOx**	**CO**	**POC**	**PM_{10}**
Emission Limit (ppmv @ 15% O_2)	5[1]	0.15	6[1]	2[1]	n/a
Emission Factor (lb/MMBtu)	0.0181	0.0007[2]	0.0132	0.0025	n/a
Pounds per hour, each unit	8.55	0.33	6.24	1.19	2.5[3]
Pounds per hour, four turbines	34.2	1.32	25.0	4.76	10.0
Pounds per day, each unit	205.2	7.9	149.8	28.6	60.0
Pounds per day, four turbines	820.8	31.7	559.0	114.2	240.0
Tons per year, four turbines [4]	74.9	5.8	98.0	20.8	43.8

[1] Specified CARB, 1999.
[2] Derived from a fuel sulfur limit of 4 ppm by weight.
[3] Obtained from manufacturer's guarantees for similar LM6000 combustion gas turbine installations
[4] NOx and CO emissions for the turbines will be limited to the equivalent of 2.5 ppmvd and 5.2 ppmvd, respectively, on an annual average basis.

8.1.5.2.2 Criteria Pollutants: Cooling Tower

Maximum emissions from the cooling tower are calculated from the average water flow rate, maximum drift rate, and maximum TDS of the make-up water. This calculation is shown in Appendix 8.1A, Table 8.1A-2. Although the cooling tower will operate only under high-temperature ambient conditions, emissions are calculated on a 24-hour per day, 8760-hour per year basis. The two-cell cooling tower will emit a maximum of 0.09 pounds per day and 0.4 tons per year of PM_{10}. As emissions from the unit are less than 10 pounds per day and 5 tons per year, the cooling tower is exempt from permitting and is not subject to BACT or offset requirements.

8.1.5.2.3 Emergency Generator and Diesel Fire Pump Engine

Emissions from the emergency generator and fire pump are based on manufacturers' performance and emissions data. The fire pump engine will be fueled with ultralow sulfur CARB Diesel fuel. Performance data sheets for the units are included in Appendix 8.1A. Maximum hourly, daily and annual emissions for each unit are shown in Table 8.1-13.

TABLE 8.1-13
Potential to Emit: Emergency Generator and Fire Pump Engine

	Maximum Emissions				
	NOx	SOx[1]	CO	POC	PM_{10}
Emergency Generator					
gram/bhp-hr	1.00	n/a	1.7	0.8	3.5×10^{-4}
lb/hr	1.77	4.5×10^{-3}	3.0	1.4	0.28
tpy[2]	0.18	4.5×10^{-4}	0.3	0.14	2.8×10^{-2}
Diesel Fire Pump					
gram/bhp-hr	9.13	0.156	2.16	0.220	0.120
lb/hr[3]	5.56	0.095	1.31	0.134	0.073
tpy[3]	0.37	0.006	0.088	0.009	0.005

[1] Derived from a natural gas content of 0.25 gr/100 scf and a Diesel fuel sulfur limit of 0.05% by weight.
[2] Based on 200 hours per year of operation.
[3] Based on 45 minutes per day and 100 hours per year of operation.

8.1.5.2.4 Toxic Air Contaminant Emissions: LM6000PC Simple Cycle Gas Turbines

Maximum hourly and annual TAC emissions were estimated for the proposed LM6000PC combustion gas turbines. Maximum proposed TAC emissions were calculated from the heat input rate (in MMBtu/hr), emission factors in pounds per million cubic feet (lb/mmcf), and the nominal higher heating value (i.e., 1022 Btu/scf). Emissions were based on the heat input rates shown in Table 8.1-11. The ammonia emission factor was derived from an ammonia slip limit of 10 ppmv at 15 percent O_2, which constitutes BACT for ammonia emissions from an SCR reactor. Other emission factors were obtained from AP-42 (Table 3.1-3, 4/00, and Table 3.4-1 of the Background Document for Section 3.1) and from the California Air Resources Board's CATEF database for gas turbines. TAC emissions are summarized in Table 8.1-14.

TABLE 8.1-14
Maximum Proposed TAC Emissions: LM6000PC Combustion Gas Turbines

Compound	Emission Factor (lb/mmcf)[1]	Maximum Proposed Emissions, four turbines (lb/hr)	Maximum Proposed Emissions, four turbines (lb/year)
Ammonia	10 ppm	25.3	332,705
Propylene	0.771	1.4	12,493
Hazardous Air Pollutants			
Acetaldehyde	0.0408	0.08	661
Acrolein	0.00369	0.01	60
Benzene	0.00333	0.01	54
1,3-Butadiene	0.000439	8.1×10^{-4}	7.1
Ethylbenzene	0.0326	0.06	528

TABLE 8.1-14
Maximum Proposed TAC Emissions: LM6000PC Combustion Gas Turbines

Compound	Emission Factor (lb/mmcf)[1]	Maximum Proposed Emissions, four turbines (lb/hr)	Maximum Proposed Emissions, four turbines (lb/year)
Formaldehyde	0.367	0.68	5,947
Hexane	0.259	0.48	4,197
Naphthalene	0.00166	3.1×10^{-3}	27
PAHs[3]	0.00017	3.1×10^{-4}	2.7
Propylene Oxide	0.027	0.05	436
Toluene	0.133	0.25	2,155
Xylene	0.0653	0.12	1,058
TOTAL HAPs		**1.7**	**15,132**

[1] Obtained from AP-42 and the CATEF database for natural gas-fired combustion gas turbines. See text.
[2] Based on an exhaust NH_3 limit of 10 ppmv @ 15% O_2.
[3] Carcinogenic PAHs only; naphthalene considered separately.

8.1.5.2.5 Toxic Air Contaminant Emissions: Other Equipment

TAC emissions from the cooling towers were calculated from the maximum drift (see Appendix 8.1A, Table 8.1A-2) of approximately 40 lb of water per hour and an analysis of cooling tower blowdown. These calculations are shown in Appendix 8.1A, Table 8.1A-7. This table includes a comparison of the maximum cooling tower TAC emission rates with the BAAQMD TAC trigger levels, and shows that the cooling tower TACs are well below the trigger levels. Therefore, the TAC emissions from the cooling tower are considered to be negligible and are not considered further.

Diesel exhaust particulate is considered a TAC by the State of California. Particulate emissions from the fire pump were shown in Table 8.1-13 to be 0.005 tpy. These emissions are included in the screening health risk assessment in Section 8.1.5.4.

8.1.5.3 Air Quality Impact Analysis

BAAQMD Rule 2-2-414 requires the applicant to provide ambient air quality modeling analyses and other impact assessments. This rule is applicable only if the proposed project is subject to PSD review, if it is a major facility with emissions of certain noncriteria pollutants in excess of the amounts listed in Rule 2-2-306, or if it is a facility with a net emissions increase greater than zero that proposes construction within 10 miles of a Class I area. Table 8.1-12 shows that emissions of all pollutants from the new facility will be less than 100 tpy, so the facility is not a major source or subject to PSD.[6] Further, the proposed facility will not be located within 10 miles of a Class I area. Therefore, the modeling requirements of Regulation 2, Rule 2 are not applicable to the proposed project. However, the CEC requires

[6] Simple cycle gas turbines are not one of the 28 PSD source categories listed in Section 169(1) of the Clean Air Act, so the facility would not be subject to PSD unless its emissions equal or exceed 250 tpy.

various ambient air quality impact analyses for CEQA review, and those analyses are presented in this section.

Air Quality Modeling Methodology

An assessment of impacts from the LECEF gas turbines on ambient air quality has been conducted using USEPA-approved air quality dispersion models. These models are based on various mathematical descriptions of atmospheric diffusion and dispersion processes in which a pollutant source impact can be calculated over a given area.

Although the proposed project consists only of the four turbines, a two-cell cooling tower, the emergency equipment, and other auxiliary equipment, the modeling analysis has been conducted as if all potential future structures, both at LECEF and at the surrounding U.S. DataPort facility, are in place. This was done to ensure that the future construction of these other structures, including the future U.S. Dataport buildings and two eight-cell cooling towers, do not cause high localized pollutant concentrations due to downwash effects. Figure 8.1B-1 in Appendix 8.1B shows the building layout used in the modeling analysis.

The impact analysis was used to determine the worst-case ground-level impacts of the new turbines. The results were compared with established state and federal ambient air quality standards and PSD significance levels. If the standards are not exceeded then it is assumed that, in the operation of the facility, no exceedances are expected under any conditions. In accordance with the air quality impact analysis guidelines developed by USEPA (40 CFR Part 51, Appendix W: *Guideline on Air Quality Models*) and CARB (*Reference Document for California Statewide Modeling Guideline*, April 1989), the ground-level impact analysis includes the following assessments:

- Impacts in simple, intermediate, and complex terrain;
- Aerodynamic effects (downwash) due to nearby building(s) and structures;
- Impacts from inversion breakup (fumigation); and
- Impacts from shoreline fumigation conditions.

Simple, intermediate, and complex terrain impacts were assessed for all meteorological conditions that would limit the amount of final plume rise. Plume impaction on elevated terrain, such as on the slope of a nearby hill, can cause high ground-level concentrations, especially under stable atmospheric conditions. Another dispersion condition that can cause high ground-level pollutant concentrations is caused by building downwash. Building downwash can occur when wind speeds are high and a building or structure is in close proximity to the emission stack. This can result in building wake effects where the plume is drawn down toward the ground by the lower pressure region that exists in the lee side (downwind) of the building or structure.

Fumigation conditions occur when the plume is emitted into a low-lying layer of stable air (inversion) that then becomes unstable, resulting in a rapid mixing of pollutants towards the ground. The low mixing height that results from this condition allows little diffusion of the stack plume before it is carried downwind to the ground. Although fumigation conditions rarely last as long as an hour, relatively high ground-level concentrations may be reached during that period. Fumigation tends to occur under clear skies and light winds, and is more prevalent in the summer. Because land surfaces tend to both heat and cool more rapidly than water, shoreline fumigation tends to occur on sunny days when the denser cooler air over water displaces the warmer, lighter air over land. During an inland sea breeze, the unstable air over land gradually increases in depth with inland distance. The boundary between the stable air over the water and the unstable air over the land and the wind speed determine if the plume will loop down before much dispersion of the pollutants has occurred.

The basic model equation used in this analysis assumes that the concentrations of emissions within a plume can be characterized by a Gaussian distribution about the centerline of the plume. Concentrations at any location downwind of a point source such as a stack can be determined from the following equation:

$$C(x,y,z,H) = \left(\frac{Q}{2\pi\sigma_y\sigma_z u}\right) * \left(e^{-1/2\left(y/\sigma_y\right)^2}\right) * \left[\left\{e^{-1/2\left(z-H/\sigma_z\right)^2}\right\} + \left\{e^{-1/2\left(z+H/\sigma_z\right)^2}\right\}\right]$$

where

C	=	the concentration in the air of the substance or pollutant in question
Q	=	the pollutant emission rate
$\sigma_y\sigma_z$	=	the horizontal and vertical dispersion coefficients, respectively, at downwind distance x
u	=	the wind speed at the height of the plume center
x,y,z	=	the variables that define the 3-dimensional Cartesian coordinate system used; the downwind, crosswind, and vertical distances from the base of the stack
H	=	the height of the plume above the stack base (the sum of the height of the stack and the vertical distance that the plume rises due to the momentum and / or buoyancy of the plume)

Gaussian dispersion models are approved by USEPA for regulatory use and are based on conservative assumptions (i.e., the models tend to overpredict actual impacts by assuming steady-state conditions, no pollutant loss through conservation of mass, no chemical reactions, etc.). The USEPA models were used to determine if ambient air quality standards would be exceeded, and whether a more accurate and sophisticated modeling procedure would be warranted to make the impact determination. The following sections describe:

- Screening modeling procedures
- Refined air quality impact analysis
- Existing ambient pollutant concentrations and preconstruction monitoring
- Results of the ambient air quality modeling analyses
- PSD increment consumption.

The screening and refined air quality impact analyses were performed using the Industrial Source Complex, Short-Term Model ISCST3 (Version 00101). ISCST3 is a Gaussian dispersion model capable of assessing impacts from a variety of source types in areas of simple, intermediate, and complex terrain. The model can account for settling and dry deposition of particulates; area, line, and volume source types; downwash effects; and gradual plume rise as a function of downwind distance. The model is capable of estimating concentrations for a wide range of averaging times (from one hour to one year).

Inputs required by the ISCST3 model include the following:

- Model options
- Meteorological data
- Source data
- Receptor data

Model options refer to user selections that account for conditions specific to the area being modeled or to the emissions source that needs to be examined. Examples of model options include use of site-specific vertical profiles of wind speed and temperature; consideration of stack and building wake effects; and time-dependent exponential decay of pollutants. The model supplies recommended default options for the user. Except where explicitly stated, such as for building downwash, as described in more detail below, default values were used. A number of these default values are required for USEPA and local BAAQMD approval of model results and are listed below.

- Rural dispersion coefficients
- Gradual plume rise
- Stack tip downwash
- Buoyancy induced dispersion
- Calm processing
- Default rural wind profile exponents = 0.07, 0.07, 0.10, 0.15, 0.35, 0.55
- Default vertical temperature gradients = 0.02, 0.035
- 10 meter anemometer height

ISCST3 uses hourly meteorological data to characterize plume dispersion. The representativeness of the data is dependent on the proximity of the meteorological monitoring site to the area under consideration, the complexity of the terrain, the exposure of the meteorological monitoring site, and the period of time during which the data are collected. The meteorological data used in this analysis were collected at the Alviso STP monitoring station adjacent to the project site. This data set was selected to be representative of meteorological conditions at the LECEF site and to meet the requirements of the USEPA "On-Site Meteorological Program Guidance for Regulatory Model Applications" (EPA, 1995). The BAAQMD staff has requested the use of the most recent five years of meteorological data to represent year-to-year variation in meteorological conditions. The analysis used 1995 through 1999 meteorological data.

The required emission source data inputs to ISCST3 include source locations, source elevations, stack heights, stack diameters, stack exit temperatures and velocities, and emission rates. The source locations are specified for a Cartesian (x,y) coordinate system where x and y are distances east and north in meters, respectively. The Cartesian coordinate system used is the Universal Transverse Mercator Projection (UTM). The stack height that can be used in the model is limited by federal and BAAQMD Good Engineering Practice (GEP) stack height restrictions, discussed in more detail below. In addition, ISCST3 requires nearby building dimension data to calculate the impacts of building downwash.

For the purposes of modeling, a stack height beyond what is required by Good Engineering Practices is not allowed (BAAQMD Regulation 2-2-418). However, this requirement does not place a limit on the actual constructed height of a stack. GEP as used in modeling analyses is the height necessary to ensure that emissions from the stack do not result in excessive concentrations of any air pollutant in the immediate vicinity of the source as a result of atmospheric downwash, eddies, or wakes that may be created by the source itself, nearby structures, or nearby terrain obstacles. In addition, the GEP modeling restriction assures that any required regulatory control measure is not compromised by the effect of that portion of the stack that exceeds the GEP. The USEPA guidance ("Guideline for Determination of Good Engineering Practice Stack Height," EPA, 1985) for determining GEP stack height indicates that GEP is the lesser of 65 meters or H_g, where H_g is calculated as follows:

$$H_g = H + 1.5L$$

where

H_g = Good Engineering Practice stack height, measured from the ground-level elevation at the base of the stack

H = height of nearby structure(s) measured from the ground-level elevation at the base of the stack

L = lesser dimension, height or maximum projected width, of nearby structure(s)

In using this equation, the guidance document indicates that both the height and width of the structure are determined from the frontal area of the structure, projected onto a plane perpendicular to the direction of the wind.

For the turbine stacks, the nearby (influencing) structures are the nearby future U.S. Dataport buildings, which are 75 feet (22.9 m) high and from 174 to 720 feet (53 to 220 m) long. Thus H = L = 75 feet, and H_g = 2.5 * 75 = 187.5 ft, and the proposed stack height of 90 feet does not exceed GEP stack height.

For regulatory applications, a building is considered sufficiently close to a stack to cause wake effects when the downwind distance between the stack and the nearest part of the building is less than or equal to five times the lesser of the height or the projected width of the building. Building dimensions for the buildings analyzed as downwash structures were obtained from plot plans. The building dimensions were analyzed using the Building Profile Input Program (BPIP) to calculate 36 wind-direction-specific building heights and projected building widths for use in building wake calculations. The building dimensions used in the GEP analysis are shown in Appendix 8.1B, Table 8.1B-1 and Figure 8.1B-1.

Screening Procedures

To ensure the impacts analyzed were for maximum emission levels and worst-case dispersion conditions, a screening procedure was used to determine the inputs to the impact modeling. The screening procedure analyzed the turbine operating conditions that would result in the maximum impacts on a pollutant-specific basis. The operating conditions examined in this screening analysis, along with their exhaust and emission characteristics, are shown in Appendix 8.1B, Table 8.1B-2. These operating conditions represent turbine operation at maximum, typical, and minimum ambient operating temperatures (95°F and 29°F), with and without inlet air chilling.

The operating conditions were screened for worst-case ambient impact using USEPA's ISCST3 model and one year of on-site meteorological data, as described above. The results of the screening procedure are presented in Appendix 8.1B, Table 8.1B-3. The screening analysis showed that except for PM_{10}, impacts under Case 1 (turbines operating without chilling at low ambient temperature) were the highest for each pollutant and averaging period. Case 3 (maximum temperature, no chilling) had the highest PM_{10} impacts. These stack parameters and emission rates were used in the refined modeling analysis to evaluate the combined impacts of the turbines, cooling towers and emergency equipment.

For the screening analysis, the CEC staff's recommendation regarding receptor grid spacing has been followed.[7]

Refined Air Quality Impact Analysis

The operating conditions and emission rates used to model the LECEF gas turbines, emergency equipment and cooling towers are summarized in Table 8.1-15. As discussed above, the turbine stack parameters for Case 3 were used in modeling 24-hour and annual average impacts for PM_{10}; parameters for Case 1 were used in modeling impacts for other pollutants. The complete modeling input for each averaging period is shown in Appendix 8.1B, Table 8.1B-4. Fire pump engine testing will be limited to 45 minutes out of any hour, and testing will take place only between 8 am and 6 pm. Annual testing operation for the fire pump and emergency generator will be limited to 100 hours and 200 hours per year, respectively.

The model receptor grids were derived from 30-meter Digital Elevation Maps (DEM) data. The CEC guidance cited above was used to locate receptors. Thirty-meter refined receptor grids were used in areas where the coarse grid analyses indicated modeled maxima for each site plan would be located. A map showing the layout of each receptor grid around the site plan is presented in Figure 8.1-10.

The screening and refined analyses included simple, intermediate, and complex terrain. Terrain features were taken from United States Geological Survey (USGS) DEM data and 7.5-minute quadrangle maps of the area including Newark, Mountain View, Cupertino, Niles, Milpitas, San Jose West, La Costa Valley, Calaveras Reservoir, and San Jose East. The coarse grid contained approximately 10,000 receptors while the refined grids contained approximately 6,300 receptors at 30-meter resolution.

7 Joseph M. Loyer to Bob Haussler and Mike Ringer, CEC, "Modeling Protocol for MID's Woodland II Turbine," April 11, 2001: 30-m spacing to 0.5 km from fenceline; 100-m spacing between 0.5 and 1 km from fenceline; and 250-m spacing from 1.0 to 10 km from fenceline.

TABLE 8.1-15
ISCST3 Model Input Data: Emission Rates for Modeling (in g/s)

Averaging Period	NOx	SO_2	CO	PM_{10}
One-hour Average				
Turbines (each)	1.077	0.042	0.786	n/a
Fire Pump Engine[1]	0.700	0.012	0.166	n/a
Three-hour Average				
Turbines (each)	n/a	0.042	n/a	n/a
Fire Pump Engine	n/a	0.004	n/a	n/a
Eight-hour Average				
Turbines (each)	n/a	n/a	0.786	n/a
Emergency Generator	n/a	n/a	0.047	n/a
24-hour Average				
Turbines (each)	n/a	0.042	n/a	0.315
Emergency Generator	n/a	n/a	n/a	1.49x10-3
Fire Pump Engine	n/a	4.98x10-4	n/a	n/a
Cooling Towers (each cell)	n/a	n/a	n/a	5.79x10-3
Annual Average				
Turbines (each)	0.539	0.042	n/a	0.315
Emergency Generator	5.10x10-3	1.30x10-5	n/a	8.17x10-4
Fire Pump Engine	7.99x10-3	1.36x10-4	n/a	1.05x10-4
Cooling Towers (each cell)	n/a	n/a	n/a	5.79x10-3

[1] Emergency generator and fire pump engine will not be tested on the same day. Unit with higher emission rate modeled for each averaging period.

Specialized Modeling Analyses

Fumigation Modeling. Fumigation occurs when a stable layer of air lies a short distance above the release point of a plume and unstable air lies below. Under these conditions, an exhaust plume may be drawn to the ground, causing high ground-level pollutant concentrations. Although fumigation conditions rarely last as long as one hour, relatively high ground-level concentrations may be reached during that time.

The SCREEN3 model was used to evaluate maximum ground-level concentrations for short-term averaging periods (24 hours or less). Although this modeling analysis is not required by District regulation, guidance from the BAAQMD staff[8] and USEPA[9] were followed in evaluating fumigation impacts. Since SCREEN3 is a single-source model, each source was modeled separately. The maximum fumigation impact from the turbines

[8] BAAQMD draft comments on Calpine's September 21, 1998, modeling protocol for the Delta Energy Center Project, dated October 22, 1998.

[9] USEPA, 1992.

occurred approximately 7 km from the facility. This analysis, which is shown in more detail in Appendix 8.1B, Table 8.1B-5, showed that impacts under fumigation conditions are expected to be lower than the maximum concentrations calculated by ISC under downwash conditions.

Shoreline Fumigation Modeling. Shoreline fumigation modeling was also conducted to determine the impacts as a result of over-water plume dispersion. Because land surfaces tend to both heat and cool more rapidly than water, shoreline fumigation tends to occur on sunny days when the denser cooler air over water displaces the warmer, lighter air over land. During an inland sea breeze, the unstable air over land gradually increases in depth with inland distance. The boundary between the stable air over the water and the unstable air over the land and the wind speed determine if the plume will loop down before much dispersion of the pollutants has occurred.

SCREEN3 can examine sources within 3000 meters of a large body of water, and was used to calculate the maximum shoreline fumigation impact. The model uses a stable onshore flow and a wind speed of 2.5 meters per second; the maximum ground-level shoreline fumigation concentration is assumed by the model to occur where the top of the stable plume intersects the top of the well-mixed thermal inversion boundary layer (TIBL). The model TIBL height was varied in accordance with BAAQMD procedures (between 2 and 6) to determine the highest shoreline fumigation impact. The worst-case (highest) impact was used in the determining facility impacts due to shoreline fumigation.

Ozone Limiting. In accordance with guidance provided by the BAAQMD staff for similar projects, one-hour NO_2 impacts were modeled using ISC3_OLM (Industrial Source Complex, Version 3, Ozone Limiting Method) Model (version 96113). While this version of ISCST3 is not based on the latest model ISCST3 update, this modeling analysis does not include any features (such as area sources or pit retention) that were affected by recent model updates.

ISC3_OLM uses hourly ozone data to perform ozone-limiting calculations on individual plumes on an hour-by-hour basis. In accordance with guidance provided by the BAAQMD staff for similar projects, the concurrent ozone data collected at the nearest monitoring station to LECEF, on Piedmont Road, were used for this analysis.

Although the Piedmont Road station did not collect ozone data during the winter months in 1998 and 1999, ozone readings at the next closest station to the project, San Jose 4th Street, were found to be generally lower than concurrent readings at the Piedmont Road station. Therefore, the Piedmont Road data were used where available and the San Jose 4th Street data were used to fill in the missing hours during the 1998 and 1999 winter months. The results of the ozone data comparison are summarized in Appendix 8.1B, Table 8.1B-6.

Annual NO_2 impacts were determined using the EPA-guidance Ambient Ratio Method and the nationwide default conversion rate of 0.75.

Turbine Commissioning. There are several high emissions scenarios possible during commissioning. The first would be the period prior to SCR system and oxidation catalyst installation, when the combustor is being tuned. Under this scenario, NOx emissions would be high because the NOx emissions control system would not be functioning and because the combustor would not be tuned for optimum performance. CO emissions would also be high because combustor performance would not be optimized and the CO emissions control system would not be functioning. The second high emissions scenario would occur when the combustor had been tuned but the SCR and oxidation catalyst installation was not complete, and other parts of the turbine operating system were being checked out. Since the combustor would be tuned but the control system installation would not be complete, NOx and CO levels would again be high. Commissioning activities and expected emissions are discussed in more detail below.

Preconstruction Monitoring

To ensure that the impacts from the LECEF gas turbines will not cause or contribute to a violation of an ambient air quality standard or an exceedance of a PSD increment, an analysis of the existing air quality in the North San Jose area is necessary. If a source is subject to PSD review, BAAQMD rules require preconstruction ambient air quality monitoring data for the purposes of establishing background pollutant concentrations in the impact area (Regulation 2-2-414.3). However, a facility may be exempted from this requirement if the predicted air quality impacts of the facility do not exceed the *de minimis* levels listed in Table 8.1-16. As the LECEF facility is not subject to PSD review, the preconstruction monitoring requirements are not applicable to the project.

TABLE 8.1-16
BAAQMD PSD Preconstruction Monitoring Exemption Levels

Pollutant	Averaging Period	*De minimis* Level
CO	8-hr average	575 µg/m^3
PM_{10}	24-hr average	10 µg/m^3
NO_2	annual average	14 µg/m^3
SO_2	24-hr average	13 µg/m^3

With the District's approval, a facility may rely on air quality monitoring data collected at District monitoring stations to satisfy the requirement for preconstruction monitoring. In such a case, in accordance with Section 2.4 of the USEPA PSD guideline, the last three years of ambient monitoring data may be used if they are representative of the area's air quality where the maximum impacts occur due to the proposed source.

The background data need not be collected on site, as long as the data are representative of the air quality in the subject area (40 CFR 51, Appendix W, Section 9.2). Three criteria are applied in determining whether the background data are representative: (1) location, (2) data quality, and (3) data currentness.[10] These criteria are defined as follows:

- Location: The measured data must be representative of the areas where the maximum concentration occurs for the proposed stationary source, existing sources, and a combination of the proposed and existing sources.

[10] USEPA, 1987.

- Data quality: Data must be collected and equipment must be operated in accordance with the requirements of 40 CFR Part 58, Appendices A and B, and PSD monitoring guidance.
- Currentness: The data are current if they have been collected within the preceding three years and they are representative of existing conditions.

Although the LECEF project is not subject to PSD review and thus not required to follow this guidance, all of the data used in this analysis meet the requirements of Appendices A and B of 40 CFR Part 58, and thus all meet the criterion for data quality. All of the data have been collected within the preceding three years, and thus all meet the criterion for currentness. The locations of the data sets used to represent background concentrations of each pollutant are discussed individually below.

NO_2, CO, and PM_{10} Ambient NO_2, CO, and PM_{10} data are collected at the San Jose (4th Street) monitoring station. This monitoring station is located approximately 7 miles south-southeast of the project site. The NO_2 and PM_{10} levels monitored at the San Jose (4th Street) monitoring station reflect regional concentrations in the vicinity of the project, and thus meet the criterion for location. CO levels are affected mainly by vehicle traffic, so CO concentrations monitored in the urbanized San Jose area are expected to conservatively represent CO levels in the less urbanized project area.

SO_2 The nearest ambient SO_2 monitor to the project is at Arkansas Street in San Francisco. SO_2 levels throughout the state are extremely low, and there are no local sources of SO_2 in either location that would be expected to affect monitored concentrations. Therefore, the Arkansas Street station provides representative background data for assessing the impacts of the project, and thus meets the location criterion.

Results of the Ambient Air Quality Modeling Analyses

The maximum facility impacts calculated from the ISCST3 and fumigation modeling analyses described above are summarized in Table 8.1-17 below. With the exception of 24-hour SO_2, the highest impacts from all pollutants are expected during normal operations, under downwash conditions.

TABLE 8.1-17
Results of the Ambient Air Quality Modeling Analysis

		Modeled Concentration (μg/m^3)		
Pollutant	**Averaging Time**	**ISCST3**	**Inversion Breakup Fumigation**	**Shoreline Fumigation**
NO_2	1-hour	225.2	n/a[1]	10.5
	Annual	0.18	--[2]	--
SO_2	1-hour	17.7	n/a	0.4
	3-hour	1.97	n/a	0.3
	24-hour	0.08	n/a	0.1
	Annual	0.01	--	--

TABLE 8.1-17
Results of the Ambient Air Quality Modeling Analysis

Pollutant	Averaging Time	Modeled Concentration (µg/m^3) ISCST3	Inversion Breakup Fumigation	Shoreline Fumigation
CO	1-hour	246.0	n/a	7.7
	8-hour	5.39	n/a	4.4
PM_{10} (including cooling tower)	24-hour	1.32	n/a	1.0
	Annual	0.124	--	--

[1] Not applicable, because fumigation results are lower than SCREEN3 results. See Appendix 8.1B, Table 8.1B-5.
[2] Not applicable, because inversion breakup and shoreline fumigation are short-term phenomena and as such are evaluated only for short-term averaging periods.

Even if the project were subject to PSD review, preconstruction monitoring would not be required because the maximum ambient impacts do not exceed *de minimis* levels, as shown in Table 8.1-18.

TABLE 8.1-18
Evaluation Of Preconstruction Monitoring Requirements

Pollutant	Averaging Time	Exemption Concentration (µg/m^3)	Maximum Modeled Concentration (µg/m^3)	Exceed Monitoring Threshold?
NOx	Annual	14	0.18	no
SO_2	24-hr	13	0.08	no
CO	8-hr	575	5.39	no
PM_{10}	24-hr	10	1.32	no

Impacts During Turbine Commissioning

As discussed above, NO_2 and CO impacts could be higher during commissioning than under other operating conditions already evaluated. The commissioning period for the project is comprised of several equipment tests. These tests and the associated NOx and CO emissions are briefly summarized below.

- Full Speed No Load (FSNL) Tests – These tests will occur over approximately a 5-day period. The tests include a test of the gas turbine ignition system, a test to ensure that the gas turbine is synchronized with its electric generator, and a test of the gas turbine's overspeed system. During the tests, the heat input to the gas turbine will be approximately 95 MMBtu/hr or 20 percent of the maximum heat input rating. Worst-case NOx emission concentrations are expected to be 100 ppm at 15 percent oxygen, or 34.2 lb/hr at 95 MMbtu/hr. Total operating time for these tests is expected to be about 40 hours, resulting in maximum total NOx emissions of 1,400 pounds. Maximum CO emissions are assumed to be equivalent to uncontrolled emissions (43.7 lb/hr), for a total of 1,750 pounds CO for the period.

- Part Load Tests – These tests will occur over approximately a 5-day period. During this testing period the gas turbine combustor water injection rates will be tuned to minimize emissions and Heat Recovery System Generator (HRSG)/steam line checks will be performed. During the tests, the heat input to the gas turbine will be approximately 280 MMBtu/hr or 60 percent of the maximum heat input rating. Maximum NOx emission concentrations may be as high as 100 ppm at 15 percent oxygen, but will average much less than 100 ppm for the period. The average NOx emission concentration for the period is assumed be 40 ppm at 15 percent oxygen (due to water injection control) at a heat input of 280 MMBtu/hr, or 41 lb/hr NOx. Total testing is estimated to last 40 hours, for a total of 1,640 pounds of NOx. Again, the worst case CO emission rate is assumed to be equivalent to uncontrolled emissions (43.7 lb/hr), for a total of 1,750 pounds CO for the period.
- Full Load Tests (SCR Not Operational) – These tests will occur over approximately a 4-day period. By the beginning of this test period, the water injection at the gas turbine combustor will be completely tuned. The SCR and CO catalyst will not be installed during this testing period. This test period will allow for complete gas path warm-up, required for removing all debris that could potentially damage the SCR and CO catalysts. During the tests, the heat input to the gas turbine will be approximately 460 MMBtu/hr or 100 percent of the maximum heat input rating. The average NOx emission concentration for the period is assumed be 30 ppm at 15 percent oxygen (water injection control) at 470 MMBtu/hr, or 51 lb/hr NOx. Total testing is estimated to last 32 hours, for a total of 1,640 pounds of NOx. Again, the worst case CO emission rate is assumed to be equivalent to uncontrolled emissions (43.7 lb/hr), for a total of 1,400 pounds CO for the period.
- Full Load Tests (SCR Partial Operation) – These tests will occur over approximately a 5-day period. During the test, the CO Catalyst and SCR Catalyst will be in place and the ammonia injection system will be tuned to minimize NOx. During the tests, the heat input to the gas turbine will be approximately 460 MMBtu/hr or 100 percent of the maximum heat input rating. SPRINT system testing will continue during this test period. Worst-case NOx and CO emission rates are assumed to be equivalent to uncontrolled emissions (42 and 43.7 lb/hr, respectively), since the turbine may trip frequently during this testing period. Total testing time is not expected to exceed 40 hours, for a total of 1,680 pounds of NOx and 1,750 pounds CO for the testing period.
- Full Load Tests (SCR Fully Operational) – These tests will occur over approximately a 13-day period. By the beginning of this test period the control systems will be completely tuned and achieving NOx and CO control at design levels. During the tests, the heat input to the gas turbine will be approximately 460 MMBtu/hr or 100 percent of the maximum heat input rating.

Total heat rate will vary between about 7,800 Btu/kW and 14,000 Btu/kW (HHV) during commissioning activities. Average heat rate for the entire commissioning period is expected to be about 10,000 Btu/kW to 11,000 Btu/kW (HHV).

The maximum modeled NO_2 and CO impact will occur under the turbine operating conditions that are least favorable for dispersion. As shown in the turbine screening analysis, these conditions are expected to occur under low-temperature conditions without chilling (Case 1).

The turbine screening results for four turbines emitting 1 g/s each under Case 1 can be scaled using a NOx emission rate of 6.43 g/s (51.0 lb/hr) to determine that the maximum modeled one-hour NO_2 impact during commissioning of two turbines is not expected to exceed 41 µg/m^3. Using the background NO_2 concentration of 241 µg/m^3, the total impact will not exceed 282 µg/m^3, which is well below the state one-hour NO_2 standard of 470 µg/m^3. The turbine screening results can also be scaled to determine that maximum 1-hour CO impacts during commissioning of two turbines are not expected to exceed 35 ug/m^3. Combined with the background concentration of 12,375 ug/m^3, the total impact will not exceed 12,410 µg/m^3, which is well below the state one-hour CO standard of 23,000 µg/m^3.

Ambient Air Quality Impacts

To determine a project's air quality impacts, the modeled concentrations are added to the maximum background ambient air concentrations and then compared to the applicable ambient air quality standards. The modeled concentrations have already been presented in earlier tables. The maximum background ambient concentrations are listed in the following text and tables. A detailed discussion of why the data collected at these stations are representative of ambient concentrations in the vicinity of the project was provided above.

Table 8.1-19 presents the maximum concentrations of NOx, CO, SO_2 and PM_{10} recorded for 1997 through 2000 from the San Jose (4th Street) and San Francisco (Arkansas Street) monitoring stations.

TABLE 8.1-19
Maximum Background Concentrations, 1997-2000 (µg/m^3)

Pollutant	Averaging Time	1997	1998	1999	2000[a]
San Jose, 4th Street					
NO_2	1-Hour	222	156	241	214
	8-Hour	47	47	49	43
CO	1-Hour	12,375	10,750	11,250	11,125
	8-Hour	6,789	6,978	6,978	4,122
PM_{10}	24-Hour	78	92	114	40
	Annual (AGM)[b]	23.7	22.5	25.4	14.2
	Annual (AAM)[c]	25.8	25.0	28.7	15.7
San Francisco, Arkansas Street					
SO_2	1-Hour	68	94	73	49
	24-hour	18.4	13.1	18.4	15.8
	Annual	2.7	2.7	5.3	5.3

[a] 2000 data are preliminary and not complete.
[b] Annual Geometric Mean
[c] Annual Arithmetic Mean

Maximum ground-level impacts due to operation of the LECEF project are shown together with the ambient air quality standards in Table 8.1-20. Using the conservative assumptions described earlier, the results indicate that the LECEF project will not cause or contribute to violations of any state or federal air quality standards, with the exception of the state PM_{10} standard. For this pollutant, existing concentrations already exceed the state standard.

TABLE 8.1-20
Modeled Maximum Impacts from New Turbines

Pollutant	Averaging Time	Maximum Facility Impact (µg/m^3)	Background (µg/m^3)	Total Impact (µg/m^3)	State Standard (µg/m^3)	Federal Standard (µg/m^3)
NO_2	1-hour [1]	225.2	241	466	470	-
	Annual	0.2	49	49.2	-	100
SO_2	1-hour	17.7	94	111.7	650	-
	24-hour	0.1	18.4	18.5	109	365
	Annual	0.01	5.3	5.3	-	80
CO	1-hour	246.0	12,375	12,621	23,000	40,000
	8-hour	5.4	6,978	6,983	10,000	10,000
PM_{10}	24-hour	1.3	114	115	50	150
(including	Annual[2]	0.1	25.4	25.5	30	-
cooling towers)	Annual[3]	0.1	28.7	28.8	-	50

[1] Includes Diesel fire pump, which will operate only 100 hours per year. One-hour average NO_2 under normal plant operating conditions will be only 13.4 ug/m^3.
[2] Annual Geometric Mean
[3] Annual Arithmetic Mean

PSD Increment Consumption

The PSD program was established to allow emission increases (increments of consumption) that do not result in significant deterioration of ambient air quality in areas where criteria pollutants have not exceeded the NAAQS. For the purposes of determining applicability of the PSD program requirements, the following regulatory procedure is used.

- LECEF emissions are evaluated to determine whether the potential increase in emissions will be significant. As LECEF is a new facility, the emissions increases are the emissions from the proposed new equipment. Table 8.1-21 shows the emissions increases due to the proposed project and compares these emissions increases with the levels considered significant.

- If an ambient impact analysis is required, the analysis is first used to determine if the impact levels are significant. The determination of significance is based on whether the impacts exceed established significance levels (BAAQMD Rule 2.2-233) shown in Table 8.1-22. If the significance levels are not exceeded, no further analysis is required.

- If the significance levels are exceeded, an analysis is required to demonstrate that the allowable increments will not be exceeded, on a pollutant-specific basis. Increments are the maximum increases in concentration that are allowed to occur above the baseline concentration. These PSD increments are also shown in Table 8.1-22.

TABLE 8.1-21
PSD Significant Emissions Levels

Pollutant	Facility Emissions (tpy)	PSD Threshold (tpy)	Significant?
Nox	79.6	250	No
SO_2	5.8	250	No
POC	20.9	250	No
CO	98.4	250	No
PM_{10}	44.2	250	No

TABLE 8.1-22
BAAQMD PSD Levels of Significance

Pollutant	Averaging Time	Significant Impact Levels	Maximum Allowable Increments
NO_2	1-Hour	19 µg/m^3	N/A[a]
	Annual	1 µg/m^3	25 µg/m^3
SO_2	3-hour	25 µg/m^3	512 µg/m^3
	24-Hour	5 µg/m^3	91 µg/m^3
	Annual	1 µg/m^3	20 µg/m^3
CO	1-Hour	2000 µg/m^3	N/A
	8-Hour	500 µg/m^3	N/A
PM_{10}	24-Hour	5 µg/m^3	30 µg/m^3
	Annual	1 µg/m^3	17 µg/m^3

[a] The significance levels for 1-hour average NO_2 and for 1-hour and 8-hour average CO are BAAQMD levels only; there are no corresponding federal significance levels or PSD increments.

Table 8.1-23 shows that the proposed project will not be a major stationary source and will not be subject to PSD review because facility emissions of all pollutants are below the 100 tpy major facility and the PSD significance thresholds.

TABLE 8.1-23
Comparison of Maximum Modeled Impacts and PSD Significance Thresholds

Pollutant	Averaging Time	Maximum Modeled Impacts (µg/m^3)	Significance Threshold (µg/m^3)	Significant?
NO_2	1-Hour[1]	225.2	19	yes
	Annual	0.2	1	no

TABLE 8.1-23
Comparison of Maximum Modeled Impacts and PSD Significance Thresholds

Pollutant	Averaging Time	Maximum Modeled Impacts (μg/m^3)	Significance Threshold (μg/m^3)	Significant?
SO_2	3-Hour	2.0	25	no
	24-Hour	0.1	5	no
	Annual	0.01	1	no
CO	1-Hour	246	2000	no
	8-Hour	5.4	500	no
PM_{10}	24-Hour	1.3	5	no
	Annual	0.1	1	no

[1] The majority of the one-hour average NO_2 impacts are from the emergency generator. The impact from the turbines alone is only 13.4 ug/m^3.

The maximum modeled impacts from the LECEF facility are compared with the significance levels in Table 8.1-23 above. These comparisons show that the proposed project exceeds only the BAAQMD 1-hour average NO_2 significance level, and only during the operation of the Diesel fire pump. The operation of the fire pump engine will be limited to less than 100 hours per year). During routine plant operations, maximum one-hour NO_2 concentrations will be below the BAAQMD significance threshold.

8.1.5.4 Screening Health Risk Assessment

The screening health risk assessment (SHRA) was conducted to determine expected impacts on public health of the noncriteria pollutant emissions from the facility. The SHRA was conducted in accordance with the CAPCOA *Air Toxics' Hot Spots Program Revised 1992, Risk Assessment Guidelines* (CAPCOA, 1993) and the BAAQMD *Risk Management Procedure Policy* (BAAQMD, 1991). The SHRA estimated the offsite cancer risk to the maximally exposed individual (MEI), as well as indicated any adverse effects of non-carcinogenic compound emissions. The CARB/OEHHA Health Risk Assessment computer program was used to evaluate multipathway exposure to toxic substances. Because of the conservatism (overprediction) built into the established risk analysis methodology, the actual risks will be lower than those estimated.

A health risk assessment requires the following information:

- Unit risk factors (or carcinogenic potency values) for any carcinogenic substances that may be emitted;
- Noncancer Reference Exposure levels (RELs) for determining non-carcinogenic health impacts;
- One-hour and annual average emission rates for each substance of concern; and
- The modeled maximum offsite concentration of each of the pollutants emitted.

Pollutant-specific unit risk factors are the estimated probability of a person contracting cancer as a result of constant exposure to an ambient concentration of 1 $\mu g/m^3$ over a 70-year lifetime. The SHRA uses unit risk factors specified by the California Office of Environmental Health Hazard Assessment (OEHHA). The cancer risk for each pollutant emitted is the product of the unit risk factor and the modeled concentration. All of the pollutant cancer risks are assumed to be additive.

An evaluation of the potential noncancer health effects from long-term (chronic) and short-term (acute) exposures has also been included in the SHRA. Many of the carcinogenic compounds are also associated with noncancer health effects and are therefore included in the determination of both cancer and noncancer effects. RELs are used as indicators of potential adverse health effects. RELs are generally based on the most sensitive adverse health effect reported and are designed to protect the most sensitive individuals. However, exceeding the REL does not automatically indicate a health impact. The OEHHA reference exposure levels were used to determine any adverse health effects from noncarcinogenic compounds. A hazard index for each noncancer pollutant is then determined by the ratio of the pollutant annual average concentration to its respective REL for a chronic evaluation. The individual indices are summed to determine the overall hazard index for the project. Because noncancer compounds do not target the same system or organ, this sum is considered conservative. The same procedure is used for the acute evaluation.

The LECEF SHRA results are compared with the established risk management procedures for the determination of acceptability. The established risk management criteria include those listed below.

- If the potential increased cancer risk is less than one in a million, the facility risk is considered not significant.
- If the potential increased cancer risk is greater than one in a million but less than ten in a million and Toxics-Best Available Control Technology (TBACT) has been applied to reduce risks, the facility risk is considered acceptable.
- If the potential increased cancer risk is greater than ten in a million and there are mitigating circumstances that, in the judgment of a regulatory agency, outweigh the risk, the risk is considered acceptable.
- For noncancer effects, total hazard indices of one or less are considered not significant.
- For a hazard index greater than one, OEHHA and the reviewing agency conduct a more refined review of the analysis and determine whether the impact is acceptable.

The SHRA includes the noncriteria pollutants listed above in Table 8.1-13. The receptor grid described earlier for criteria pollutant modeling was used for the SHRA. The SHRA results for LECEF are presented in Table 8.1-24, and the detailed calculations are provided in Appendix 8.1C. The locations of the maximum modeled risks are shown in Figure 8.1C-1.

TABLE 8.1-24
Screening Health Risk Assessment Results

Cancer Risk to Maximally Exposed Individual	0.02 in one million
Acute Inhalation Hazard Index	0.02
Chronic Inhalation Hazard Index	0.003

The HRA results indicate that the acute and chronic hazard indices are well below 1.0, so are not significant. In addition, the maximum chronic noninhalation exposure is well below the REL so is also considered insignificant. The cancer risk to a maximally exposed individual is 0.02 in one million, well below the one in one million level. The screening HRA results indicate that, overall, the LECEF project will not pose a significant health risk at any location.

A separate assessment of cancer risk was performed for the Diesel fire pump engine, as the unit has maximum annual average exhaust particulate impacts in a different location than the location of the maximum cancer risk from the turbines (see Appendix 8.1C, Figure 8.1C-1). The maximum annual average PM_{10} concentration from the fire pump engine is 0.0007 ug/m^3. Applying the Diesel exhaust particulate unit risk value of 300x10^{-6} per ug/m^3 and adjusting for workplace exposure (46 years/70 years), maximum risk is 0.14 in one million.

8.1.5.5 Construction Impacts Analysis

Emissions due to the construction phase of the project have been estimated, including an assessment of emissions from vehicle and equipment exhaust and the fugitive dust generated from material handling. A dispersion modeling analysis was conducted based on these emissions. A detailed analysis of the emissions and ambient impacts is included in Appendix 8.1D. The results of the analysis indicate that the maximum construction impacts will be below the state and federal standards for all the criteria pollutants emitted. The best available emission control techniques will be used. The LECEF construction site impacts are not unusual in comparison to most construction sites; construction sites that use good dust suppression techniques and low-emitting vehicles typically do not cause violations of air quality standards.

Combustion Diesel PM_{10} emission impacts have also been evaluated to demonstrate that the carcinogenic risk from construction activities will be below one in one million at the nearest receptor. This risk screening analysis is also included in Appendix 8.1D.

8.1.6 Consistency with Laws, Ordinances, Regulations and Standards (LORS)

8.1.6.1 Consistency with Federal Requirements

The BAAQMD has been delegated authority by the USEPA to implement and enforce most federal requirements that may be applicable to the LECEF project, including the new source performance standards and PSD review for all pollutants. Compliance with BAAQMD regulations ensures compliance and consistency with the corresponding federal requirements as well. LECEF will also be required to comply with the Federal Acid Rain requirements (Title IV).

Since BAAQMD has received delegation for implementing Title IV through its Title V permit program, LECEF will secure a BAAQMD Title V permit that imposes the necessary requirements for compliance with the Title IV Acid Rain provisions.

8.1.6.2 Consistency with State Requirements

State law sets up local air pollution control districts and air quality management districts with the principal responsibility for regulating emissions from stationary sources. As discussed above, LECEF is under the local jurisdiction of BAAQMD, and compliance with BAAQMD regulations will ensure compliance with state air quality requirements.

8.1.6.3 Consistency with Local Requirements: Bay Area Air Quality Management District

The BAAQMD has been delegated responsibility for implementing local, state, and federal air quality regulations in the nine counties surrounding the Bay Area. The LECEF project is subject to BAAQMD regulations that apply to new sources of emissions, to the prohibitory regulations that specify emission standards for individual equipment categories, and to the requirements for evaluation of impacts from toxic air pollutants. The following sections include the evaluation of facility compliance with the applicable BAAQMD requirements.

Under the regulations that govern new sources of emissions, LECEF is required to secure a preconstruction Determination of Compliance from the District (Regulation 2, Rule 3), as well as demonstrate continued compliance with regulatory limits when the facility becomes operational. The preconstruction review includes demonstrating that the gas turbines will use BACT and will provide any necessary emission offsets.

Applicable BACT levels are shown in Table 8.1-25, along with anticipated potential facility emissions. BAAQMD Rule 2-2-301 requires LECEF to apply BACT to any source that has an increase in emissions of NOx, POC, SO_x, CO, and PM_{10} (criteria pollutants) and that has a potential to emit in excess of 10.0 pounds per highest day. Rule 2.2-301.2 imposes BACT for emissions of lead, asbestos, beryllium, mercury, fluorides, sulfuric acid mist, hydrogen sulfide, total reduced sulfur, and reduced sulfur compounds when emitted in excess of specified amounts. The LECEF facility will not emit any of these latter pollutants in detectable quantities; therefore, Rule 2-2-301.2 is not applicable to the proposed project. As shown in the table, BACT is required for NOx, POC, SO_2, CO, and PM_{10}. The calculation of facility emissions was discussed in Section 8.1.5.1.1.

TABLE 8.1-25
Facility Best Available Control Technology Requirements

Pollutant	Applicability Level	Facility Emission Level (lbs/day)	BACT Required?
Criteria Pollutants: BAAQMD Regulation 2-2-301.1			
POC	10 lbs/day	114.5	yes
NPOC	10 lbs/day	-	no
NOx	10 lbs/day	841.1	yes
SO_2	10 lbs/day	32.2	yes
PM_{10}	10 lbs/day	240.4	yes

TABLE 8.1-25
Facility Best Available Control Technology Requirements

Pollutant	Applicability Level	Facility Emission Level (lbs/day)	BACT Required?
CO	10 lbs/day	603.2	yes
Noncriteria Pollutants: BAAQMD Regulation 2-2-301.2			
Lead	3.2 lbs/day	neg.	no
Asbestos	0.04 lbs/day	neg.	no
Beryllium	0.002 lbs/day	neg.	no
Mercury	0.5 lbs/day	neg.	no
Fluorides	16 lbs/day	neg.	no
Sulfuric Acid Mist	38 lbs/day	neg.	no
Hydrogen Sulfide	55 lbs/day	neg.	no
Total Reduced Sulfur	55 lbs/day	neg.	no
Reduced Sulfur Compounds	55 lbs/day	neg.	no

BACT for the applicable pollutants was determined by reviewing the BAAQMD BACT Guidelines Manual, the South Coast Air Quality Management District BACT Guidelines Manual, the most recent *Compilation of California BACT Determinations*, CAPCOA (2nd Ed., November 1993), and USEPA's BACT/LAER Clearinghouse. A summary of the review is provided in Appendix 8.1E. For the gas turbines, the BAAQMD considers BACT to be the most stringent level of demonstrated emission control that is feasible. The LECEF facility will use the BACT measures discussed below.

As a BACT measure, LECEF will limit the fuels burned in the new gas turbines to natural gas, a clean burning fuel. Burning of liquid fuels in the gas turbine combustors would result in greater criteria pollutant emissions than if the units burned only gaseous fuels. This measure acts to minimize the formation of all criteria air pollutants.

BACT for NOx emissions from the gas turbine will be the use of low NOx emitting equipment and add-on controls. LECEF will use a SCR system to reduce NOx emissions to 5.0 ppmvd NOx, corrected to 15 percent O_2 on a one-hour average basis. The BAAQMD BACT guidelines indicate that BACT from large gas turbines (>23 MMBtu/hr heat input) is an exhaust concentration not to exceed 5 ppmvd NOx, corrected to 15 percent O_2; therefore, the proposed gas turbines will meet the BACT requirements for NOx. The BAAQMD BACT Guideline determination for NOx from gas turbines is shown in Appendix 8.1E.

BACT for CO emissions will be achieved by using oxidation catalysts to reduce CO emissions to 6.0 ppmvd NOx, corrected to 15 percent O_2. Recent BAAQMD BACT determinations indicate that BACT from large gas turbines (>23 MMBtu/hr heat input) is

6 ppmvd CO, corrected to 15 percent O_2. A review of recent BACT determinations for CO from gas turbines is provided in Appendix 8.1E.

BACT for POC emissions will be achieved by use of good combustion practices in the gas turbines. BACT for POC emissions from combustion devices has historically been the use of best combustion practices. POC emissions leaving the stacks will not exceed 2.0 ppmvd, corrected to 15 percent oxygen. This level of emissions is consistent with recent BACT determinations for similar projects.[11]

For the turbines, BACT for PM_{10} is best combustion practices and the use of gaseous fuels. As mentioned, use of clean burning natural gas fuel with a typical sulfur content of 0.25 gr/100 scf will result in minimal particulate emissions. SO_2 emissions will be kept at a minimum by firing clean burning natural gas fuel with a typical sulfur content of 0.25 gr/100 scf.

In addition to the BACT requirements, BAAQMD regulation 2-2-302 requires the project to provide full emission offsets when emissions exceed specified levels on a pollutant-specific basis. As shown in Table 8.1-26, LECEF will be required to provide emission offsets for NOx and POC emissions.

TABLE 8.1-26
BAAQMD Offset Requirements and Facility Emissions

Pollutant	Applicable Facility Size	Emission Increase	Facility Emissions	Regulation	Offsets Required
POC	15 tpy	Any increase	20.9 tpy	2-2-302	Yes
NOx	15 tpy	Any increase	76.9 tpy	2-2-302	Yes
PM_{10}	100 tpy	1 tpy Net increase	43.8 tpy	2-2-303	No
SO_2	100 tpy	1 tpy Net increase	5.8 tpy	2-2-303	No

Section 2-302 requires NOx emission reduction credits to be provided at an offset ratio of 1.15:1. POC offsets are required at a ratio of 1:1 because facility POC emissions are less than 50 tpy. Because both POC and NOx contribute to the Bay Area Basin ozone levels, Section 2-302.2 allows the use of POC emission reduction credits for NOx emissions, at the 1.15:1 offset ratio.

Section 2-303 requires emissions offsets for emissions increases at facilities that emit more than 100 tpy of SO_2 and PM_{10}. As facility emissions of SO_2 and PM_{10} will be below 100 tpy, offsets are not required for these pollutants. As shown in Table 8.1-23, the maximum SO_2 and PM_{10} impacts from the proposed project are well below the significance thresholds so are not considered significant, and no mitigation is necessary.

Sections 2-304 and 2-305 impose emissions offset requirements, or require project denial, if SO_2, NO_2, PM_{10}, or CO air quality modeling results indicate emissions will interfere with the attainment or maintenance of the applicable ambient air quality standards or will exceed PSD increments. As discussed above, BAAQMD regulations do not require LECEF to conduct

[11] Although the turbines will be equipped with oxidation catalysts, no POC control effectiveness has been assumed.

these analyses, since the facility is not subject to PSD review and is not a major source. However, modeling for these pollutants has been conducted to satisfy CEC requirements. The modeling analyses show that facility emissions will not interfere with the attainment or maintenance of the applicable air quality standards.

Emissions offset requirements for NOx and POC are shown in Table 8.1-27 below. Sufficient offsets are available from offsets currently owned by Calpine, through the District offset emissions bank, and through sources that have not banked emissions with the District, such as facility closures. The BAAQMD offset bank listing provides the required information for offset identification and assessment of the emission reduction levels achieved. The information includes:

- Ownership of emission offset sources; and
- Emission reduction credits granted by BAAQMD that BAAQMD has determined meets its requirements for bankable offsets.

TABLE 8.1-27
Facility Offset Requirements

Pollutant	Net Increase in Emissions (tpy)	Required Offset Ratio	Required Offsets (tpy)
NOx	76.9	1.15:1.0	88.44
POC	20.9	1.0:1.0	20.9

A current listing of deposits in the offset bank is included in Appendix 8.1F. The applicant expects to use certificates it already owns to meet the offset requirements for this project.

As discussed in AFC Section 8.1.4, Regulatory Setting, the BAAQMD PSD program requirements apply on a pollutant-specific basis to:

- A new major facility that will emit 100 tpy or more, or a major modification to an existing major facility.
- A facility that emits 100 tpy or more, with net emissions increases since the applicable PSD baseline date that exceed the modeling threshold levels shown in Table 8.1-28.

TABLE 8.1-28
BAAQMD PSD Requirements Applicable to 100 tpy Fossil Fuel Fired Power Plants

Pollutant	PSD Facility Applicability Level	Modeling Threshold Level	Emissions from New Facility	Modeling Required	Applicable District Regulation
Nox	100 tpy	100 tpy	76.9 tpy	No	2-2-304.2
SO_2	100 tpy	100 tpy	5.8 tpy	No	2-2-304.2
PM_{10}[1]	100 tpy	100 tpy	43.8 tpy	No	2-2-304.3
CO	100 tpy	100 tpy	98.4 tpy	No	2-2-305.1
POC	100 tpy	not required	-	-	-

[1] All particulate matter from the gas turbines is assumed to be emitted as PM_{10}. Cooling tower is not included as it is exempt from permit requirements.

LECEF will not be a major source. Therefore, it is not subject to the USEPA and BAAQMD PSD regulations. The BAAQMD modeling threshold requirements and their applicability to the proposed project are shown in Table 8.1-28.

Rule 2-2-308 requires applicants to demonstrate that emissions from a project located within 10 km (6.2 miles) of a Class I area will not cause or contribute to the exceedance of any national ambient air quality standard or any applicable Class I PSD increment. Because the nearest Class I areas, Point Reyes National Seashore and Pinnacles National Park, are farther than 10 km from LECEF, this section is not applicable to the proposed facility.

Rule 2-2-306 is also not applicable to LECEF. This section requires modeling analyses for specific noncriteria pollutants (lead, asbestos, beryllium, mercury, fluorides, sulfuric acid mist, hydrogen sulfide, total reduced sulfur, and reduced sulfur compounds) if they are emitted in significant quantities and if the facility emits more than 100 tons per year of any criteria pollutant. As the LECEF is not a major source and will not emit significant quantities of the specific noncriteria pollutants, a noncriteria pollutant modeling analysis under this section is not required. However, a screening health risk assessment has been conducted for potential emissions of toxic air contaminants. The analysis methodology and results are discussed in Section 8.1.5.4.

Rule 2-2-418 requires the use of Good Engineering Practices (GEP) stack height. Conformance with the GEP stack height requirement was demonstrated in the modeling analysis conducted for the proposed project.

Regulation 2, Rule 6, Major Facility Review (Title V permit program), applies to major facilities and phase II acid rain facilities. Although LECEF is not a major facility, it is a phase II acid rain facility. Under the Title V permit program, LECEF will be required to file an application for an operating permit within 12 months of facility startup. The Phase II acid rain requirements will also apply to LECEF. As a Phase II Acid Rain facility, LECEF will be required to provide sufficient allowances for every ton of SO_2 emitted during a calendar year. LECEF will obtain any necessary allowances on the current open trade market. LECEF will also be required to install and operate continuous monitoring systems; BAAQMD enforcement of its rules will ensure installation of these systems.

The general prohibitory rules of the BAAQMD applicable to the proposed project and the determination of compliance follow.

Regulation 1-301 addresses Public Nuisance. The new facility will emit insignificant quantities of odorous or visible substances; therefore, the project will comply with this regulation.

Regulation 6 pertains to particulate matter and visible emissions. Any visible emissions from the project will not be darker than No. 1 when compared to a Ringlemann Chart for any period(s) aggregating 3 minutes in any hour. Because the new turbines will burn clean fuels, the opacity standard of not greater than 20 percent for a period or periods aggregating 3 minutes in any hour and the particulate emission concentrations limit of 0.15 grains per standard cubic feet of exhaust gas volume will not be exceeded.

Regulation 7, Odorous Substances, is not applicable to the proposed project. Gas turbine operations do not result in odor complaints.

Regulation 9, Rule 1, Sulfur Dioxide, specifies an emission standard of less than 300 ppm SO_2. Because of the insignificant quantities of sulfur in natural gas, this limit will be achieved. In addition, the ambient air quality modeling analysis discussed in Section 8.1.5.3.1 shows that ground-level concentrations of SO_2 from the proposed project will not result in ground-level concentrations in excess of 0.5 ppm continuously for 3 consecutive minutes or 0.25 ppm averaged over 60 consecutive minutes, or 0.05 ppm averaged over 24 hours.

Regulation 9, Rule 2, pertains to hydrogen sulfide. The gas turbines are not expected to emit H_2S.

Regulation 9, Rule 3, Nitrogen Oxides From Heat Transfer Operations, imposes a NOx limit of 125 ppm. The proposed project will easily comply with this rule.

Regulation 9, Rule 9, limits the emissions of nitrogen oxides from gas turbines during baseload operations to less than 9 ppmv corrected to 15 percent O_2. The proposed NOx level of 5 ppmvd, corrected to 15 percent O_2, will satisfy the requirements of this rule. In addition, the continuous emission monitoring (CEM) system that LECEF will install will also satisfy the monitoring and recordkeeping requirements of this rule.

BAAQMD Regulation 10 (40 CFR 60 Subpart GG) adopts by reference the federal New Source Performance Standards (NSPS) for stationary gas turbines. This regulation requires monitoring of fuel; imposes limits on the emissions of NOx, SO_2, and PM_{10}; and requires source testing of stack emissions, process monitoring, and data collection and recordkeeping. All of the BACT limits imposed on the new turbines will be more stringent than the requirements of the NSPS emission limits. Monitoring and recordkeeping requirements for BACT will be more stringent than the requirements in this rule. LECEF will comply with the NSPS regulations.

8.1.7 Cumulative Air Quality Impacts Analysis

An analysis of potential cumulative air quality impacts that may result from the proposed gas turbines and other reasonably foreseeable projects is generally required only when project impacts are significant.

To ensure that potential cumulative impacts of LECEF and other nearby projects are adequately considered, a cumulative impacts analysis was conducted in accordance with the protocol included as Appendix 8.1G. The BAAQMD staff provided a list of facilities within a 6-mile radius of the plant that have an Authority to Construct but have not yet commenced operation. Of the 33 facilities identified, only six had total emissions of any pollutant (other than POCs) in excess of 5 tons per year (see listing in Appendix 8.1G). These six sources were modeled with the proposed new project to determine whether the combined impacts would be significant. The results of the cumulative impacts analysis are summarized in Table 8.1-29 below. The analysis indicates that the project will not create or contribute to a significant cumulative impact.

TABLE 8.1-29
Results of Cumulative Impacts Analysis

Pollutant	Averaging Time	Maximum Combined Impact (µg/m^3)	Background (µg/m^3)	Total Impact (µg/m^3)	State Standard (µg/m^3)	Federal Standard (µg/m^3)
NO_2	1-hour [1]	234.3	241	475.3[2]	470	-
	Annual	12.7	49	62	-	100
SO_2	1-hour	17.7	94	112	650	-
	24-hour	1.6	18	20	109	365
	Annual	0.2	5	5	-	80
CO	1-hour	1,905	12,375	14,280	23,000	40,000
	8-hour	560	6,978	7,538	10,000	10,000
PM_{10}	24-hour	1.4	114	115[5]	50	150
	Annual[3]	0.4	25.4	25.8	30	-
	Annual[4]	0.4	28.7	29.1	-	50

[1] One-hour NO_2 impacts modeled using ISC_OLM. Annual NO_2 impacts calculated from modeled annual NOx impacts using ARM method and default 0.75 conversion factor.
[2] Project contribution to the maximum combined impact is 0.0 µg/m^3; existing source contribution to the project maximum concentration is 0.02 µg/m^3. Consequently, this does not indicate a significant cumulative impact.
[3] Annual Geometric Mean
[4] Annual Arithmetic Mean
[5] Project contribution to the maximum combined impact is 0.001 µg/m^3; existing source contribution to the project maximum concentration is 0.004 µg/m^3. Consequently, this does not indicate a significant cumulative impact.

8.1.8 Nitrate Deposition

An analysis of the nitrate deposition impacts from the project is presented in Section 8.2.2.3

8.1.9 Mitigation

Mitigation will be provided for all emissions increases from the project in the form of offsets and the installation of BACT, as required under District regulations. The cumulative air quality impacts analysis described in Appendix 8.1G shows that the project will not result in significant cumulative impacts. Therefore, no additional mitigation is necessary.

8.1.10 References

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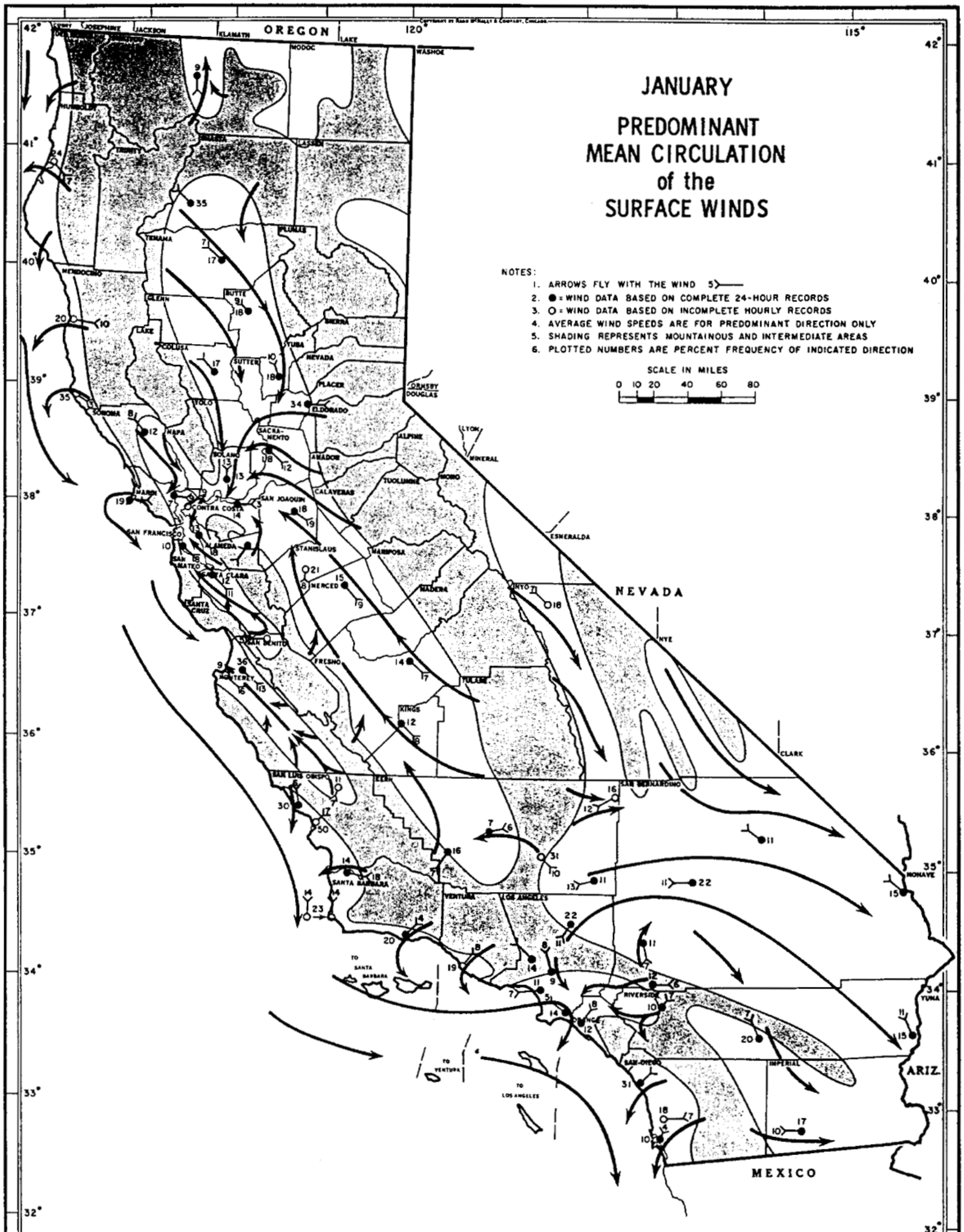


FIGURE 8.1-1
JANUARY PREDOMINANT MEAN CIRCULATION OF SURFACE WINDS
APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

D072001001RDD_24 (7/13/01)

CH2MHILL

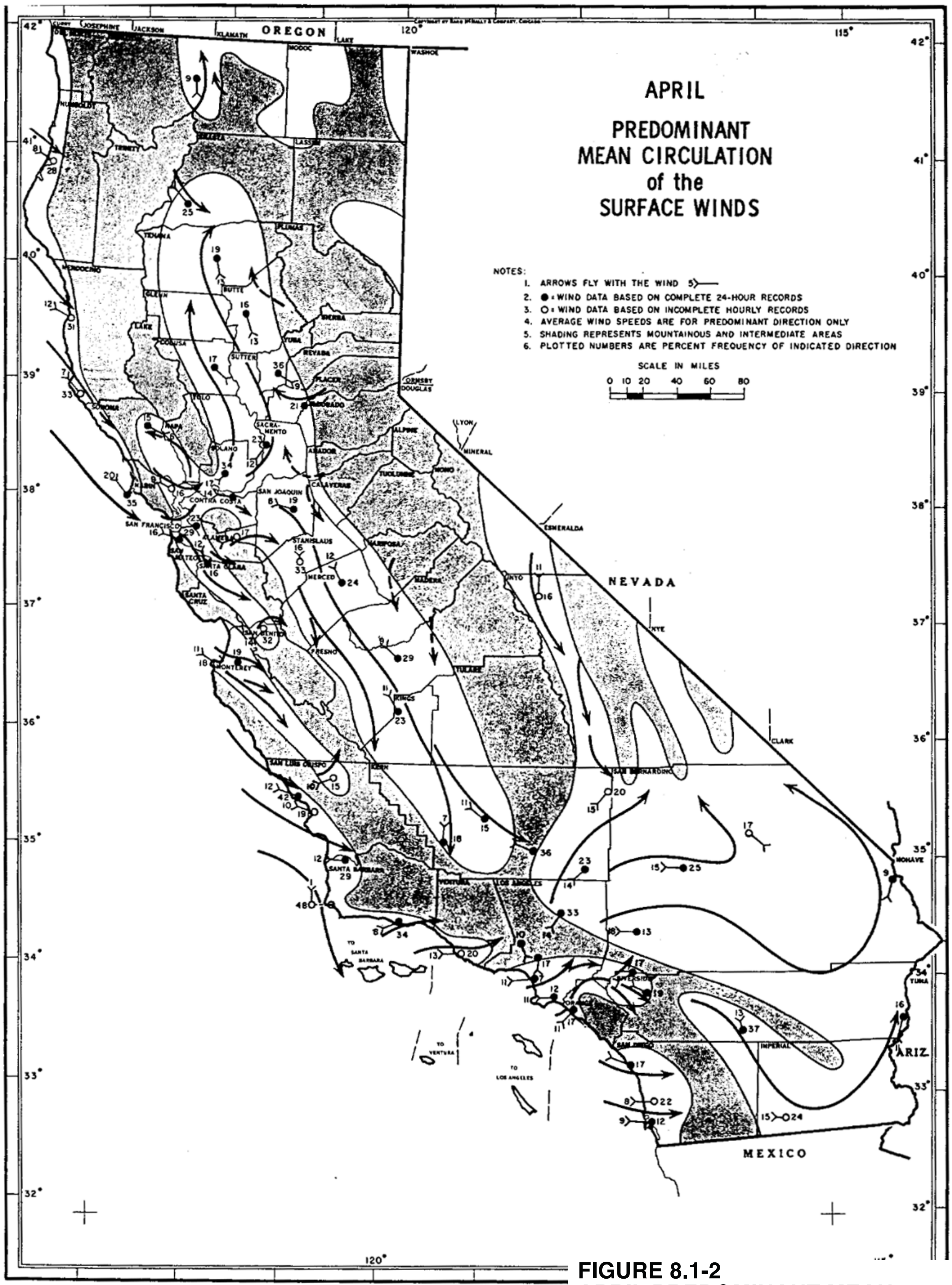


FIGURE 8.1-2
APRIL PREDOMINANT MEAN CIRCULATION OF SURFACE WINDS
APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

D072001001RDD_25 (7/13/01)

CH2MHILL

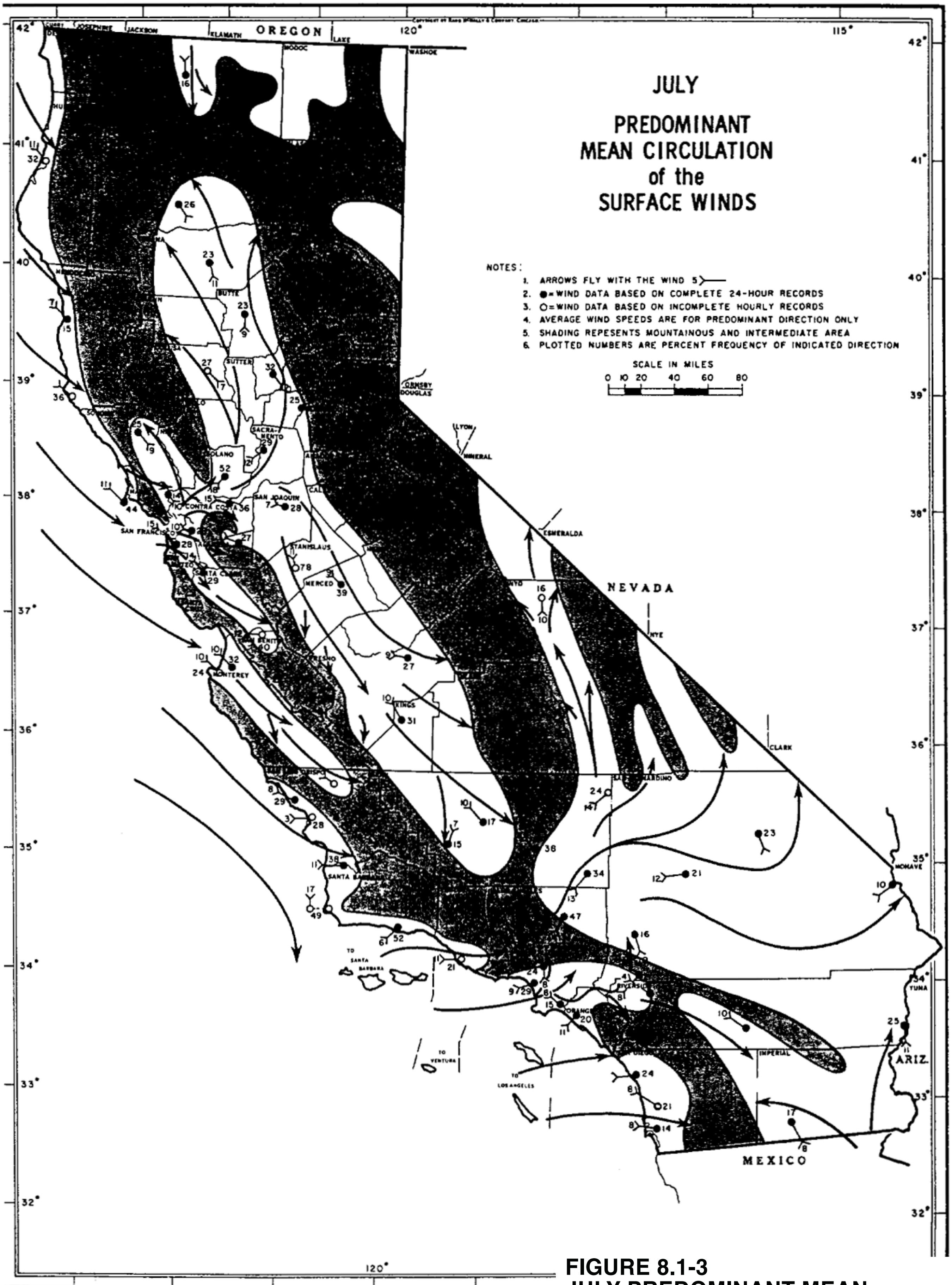


FIGURE 8.1-3
JULY PREDOMINANT MEAN CIRCULATION OF SURFACE WINDS
APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

D072001001RDD_26 (7/16/01)

CH2MHILL

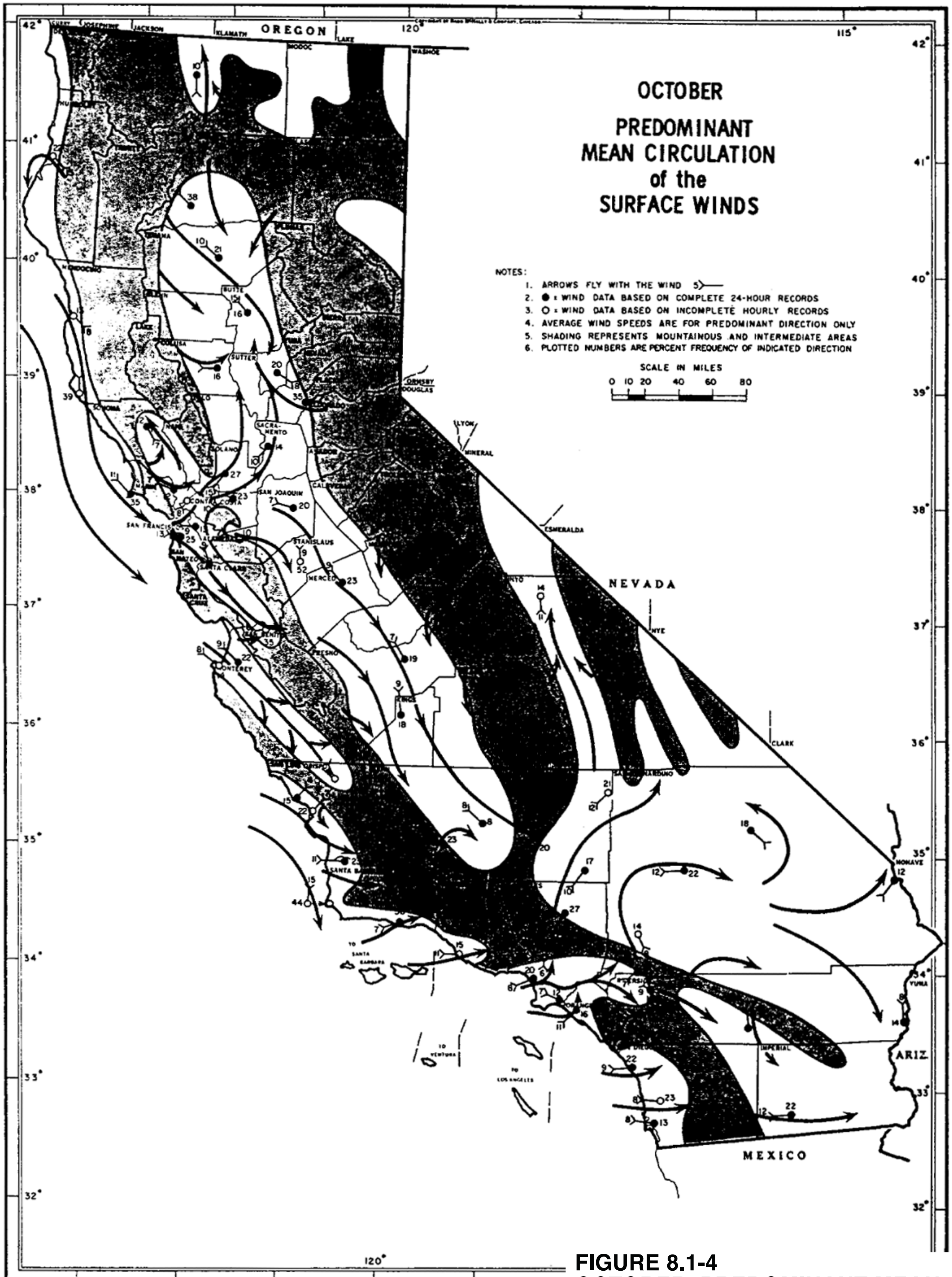
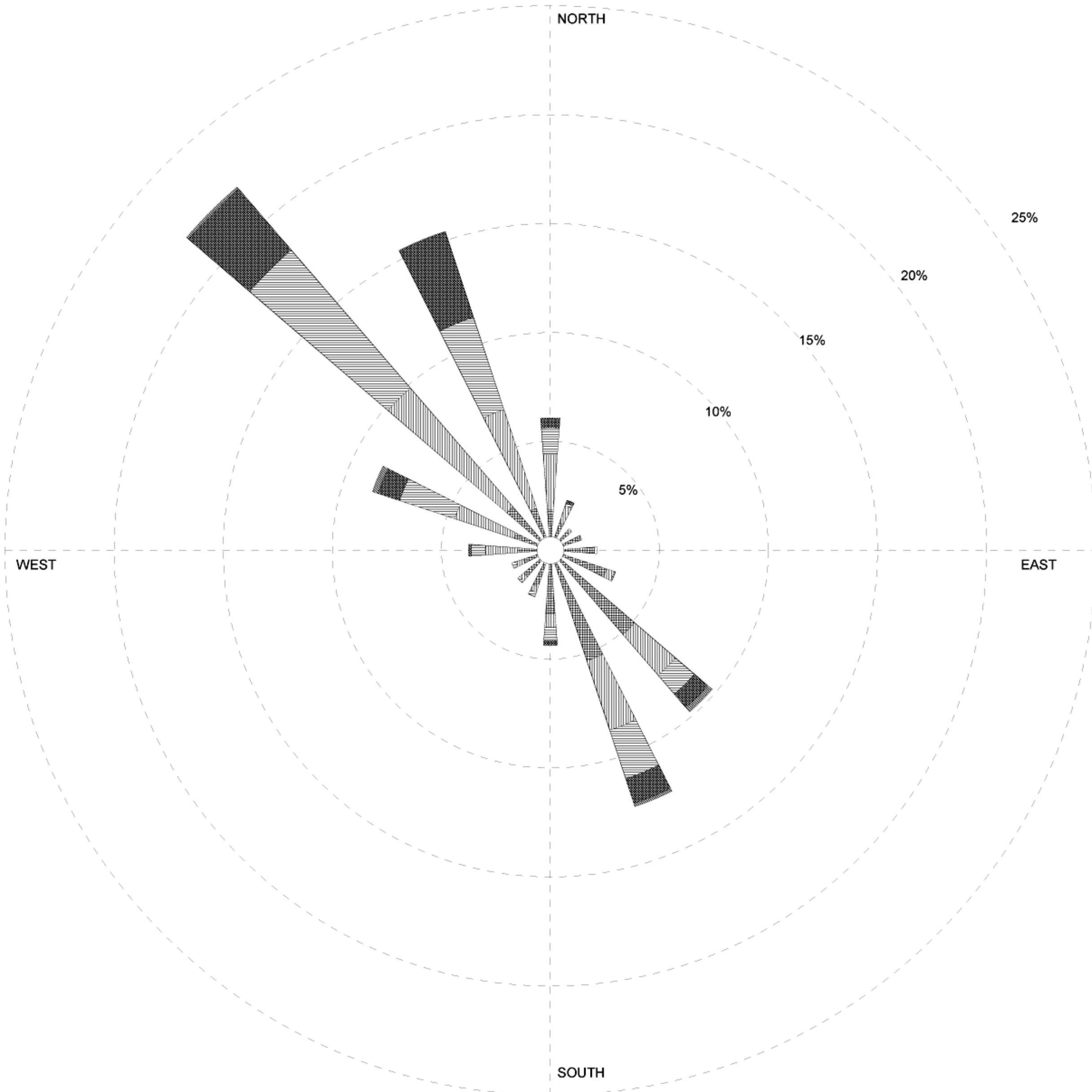


FIGURE 8.1-4
OCTOBER PREDOMINANT MEAN CIRCULATION OF SURFACE WINDS
APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

D072001001RDD_27 (7/24/01)

Station #7905 - ALVISO SEWAGE TREATMENT PLANT SAN JOSE, CA



Wind Speed (m/s)	MODELER	DATE	COMPANY NAME
> 11.00 8.50 - 11.00 5.50 - 8.50 3.50 - 5.50 2.00 - 3.50 0.50 - 2.00		05/30/2001	Sierra Research
	DISPLAY Wind Speed	UNIT m/s	COMMENTS
	AVG. WIND SPEED 3.12 m/s	CALM WINDS 0.94%	
	ORIENTATION Direction (blowing from)	PLOT YEAR-DATE-TIME 1995 Jan 1 - Dec 31 Midnight - 11 PM	PROJECT/PLOT NO.

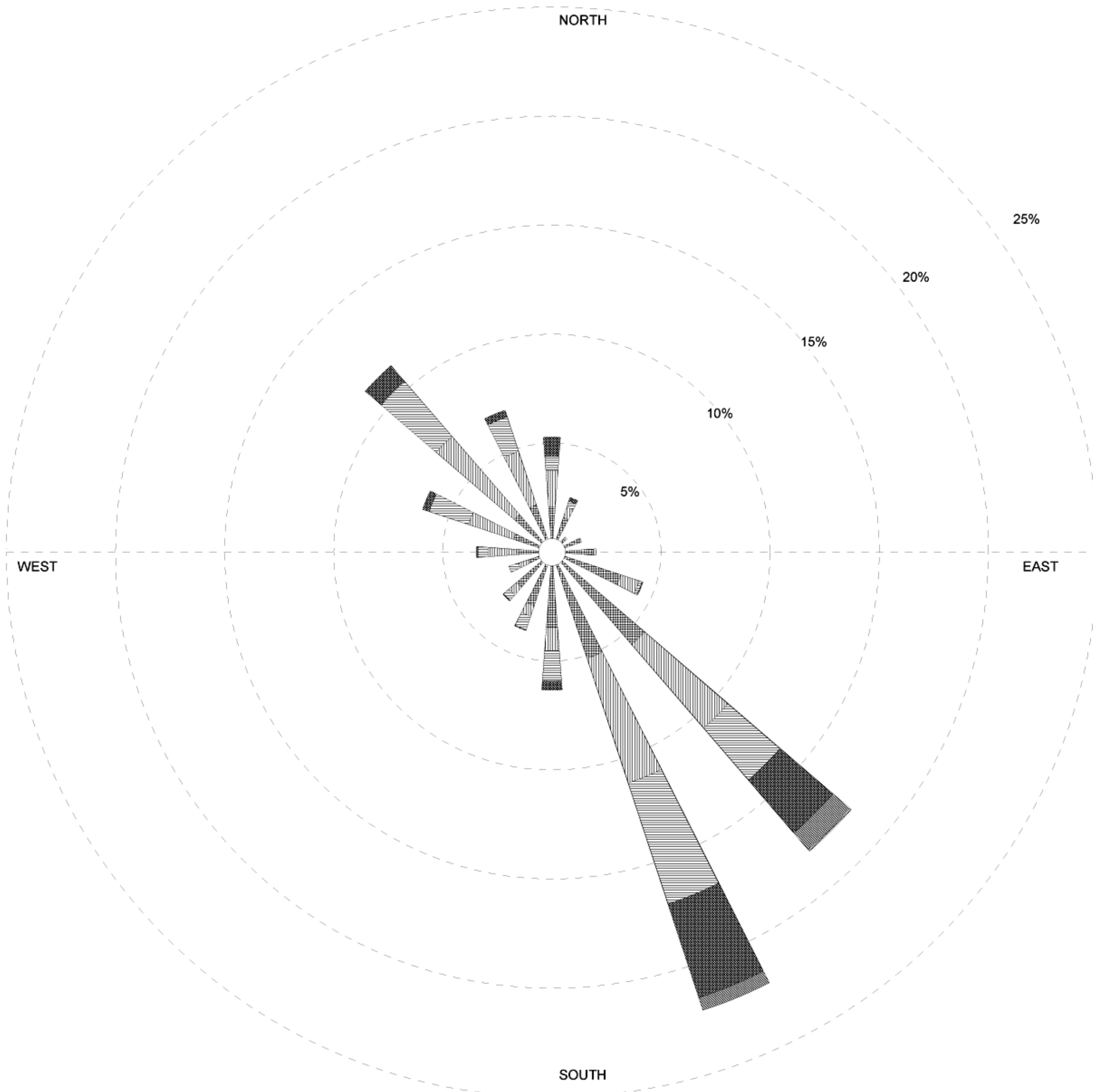
WRPLOT View 3.5 by Lakes Environmental Software - www.lakes-environmental.com

FIGURE 8.1-5a
ANNUAL WIND ROSE 1995
APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

D072001001RDD_28 (7/16/01)

CH2MHILL

Station #7905 - ALVISO SEWAGE TREATMENT PLANT SAN JOSE, CA



Wind Speed (m/s)	MODELER	DATE	COMPANY NAME
> 11.00		05/29/2001	Sierra Research
8.50 - 11.00	DISPLAY **Wind Speed**	UNIT **m/s**	COMMENTS
5.50 - 8.50	AVG. WIND SPEED **3.08 m/s**	CALM WINDS **0.00%**	
3.50 - 5.50 2.00 - 3.50 0.50 - 2.00	ORIENTATION **Direction (blowing from)**	PLOT YEAR-DATE-TIME **1995 Jan 1 - Mar 31 Midnight - 11 PM**	PROJECT/PLOT NO.

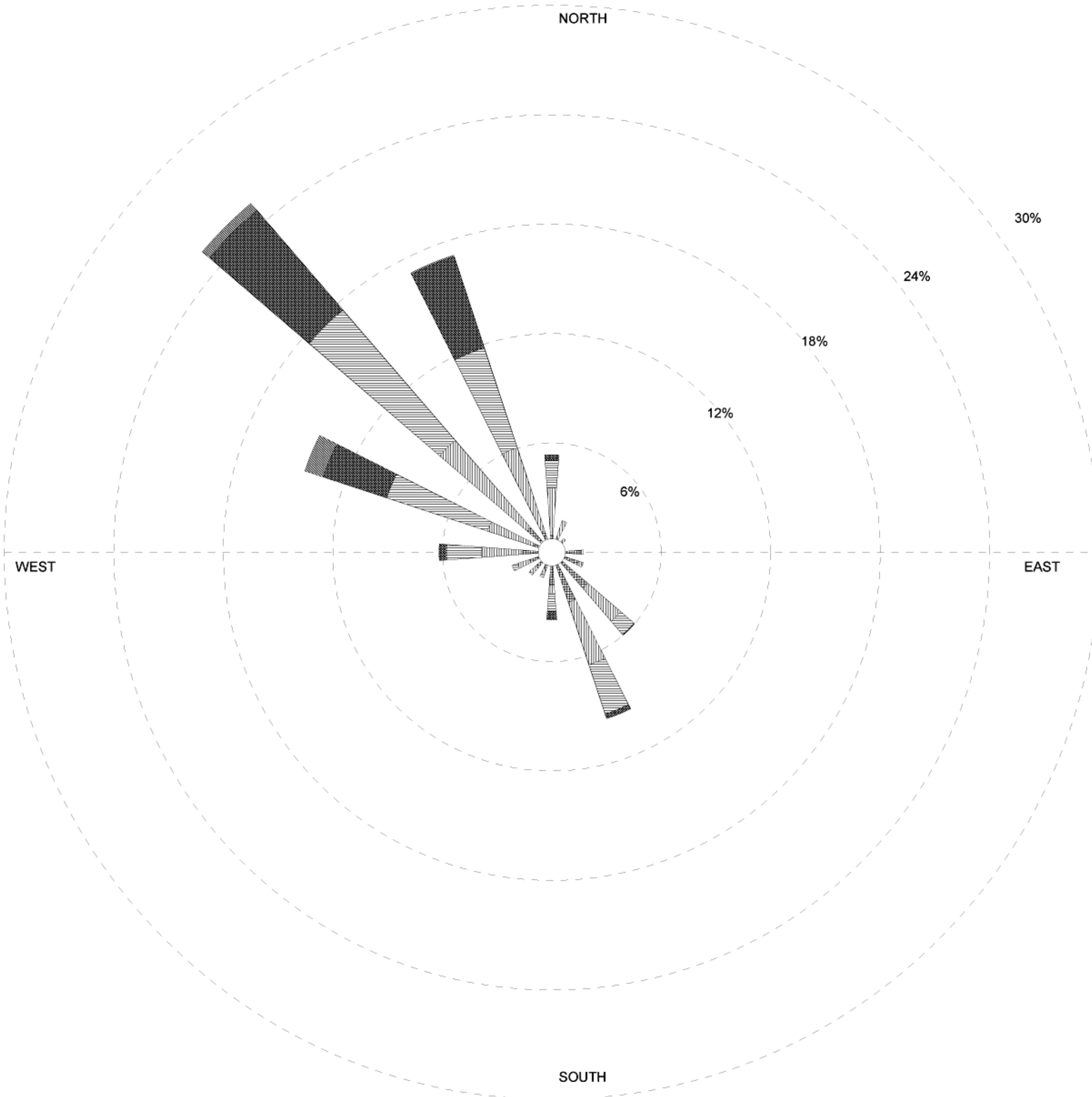
WRPLOT View 3.5 by Lakes Environmental Software - www.lakes-environmental.com

FIGURE 8.1-5b
QUARTERLY WIND ROSE
FIRST QUARTER 1995

APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

CH2MHILL

Station #7905 - ALVISO SEWAGE TREATMENT PLANT SAN JOSE, CA



Wind Speed (m/s)	MODELER	DATE **05/29/2001**	COMPANY NAME **Sierra Research**
> 11.00 8.50 - 11.00 5.50 - 8.50 3.50 - 5.50 2.00 - 3.50 0.50 - 2.00	DISPLAY **Wind Speed**	UNIT **m/s**	COMMENTS
	AVG. WIND SPEED **3.73 m/s**	CALM WINDS **0.05%**	
	ORIENTATION **Direction (blowing from)**	PLOT YEAR-DATE-TIME **1995 Apr 1 - Jun 30 Midnight - 11 PM**	PROJECT/PLOT NO.

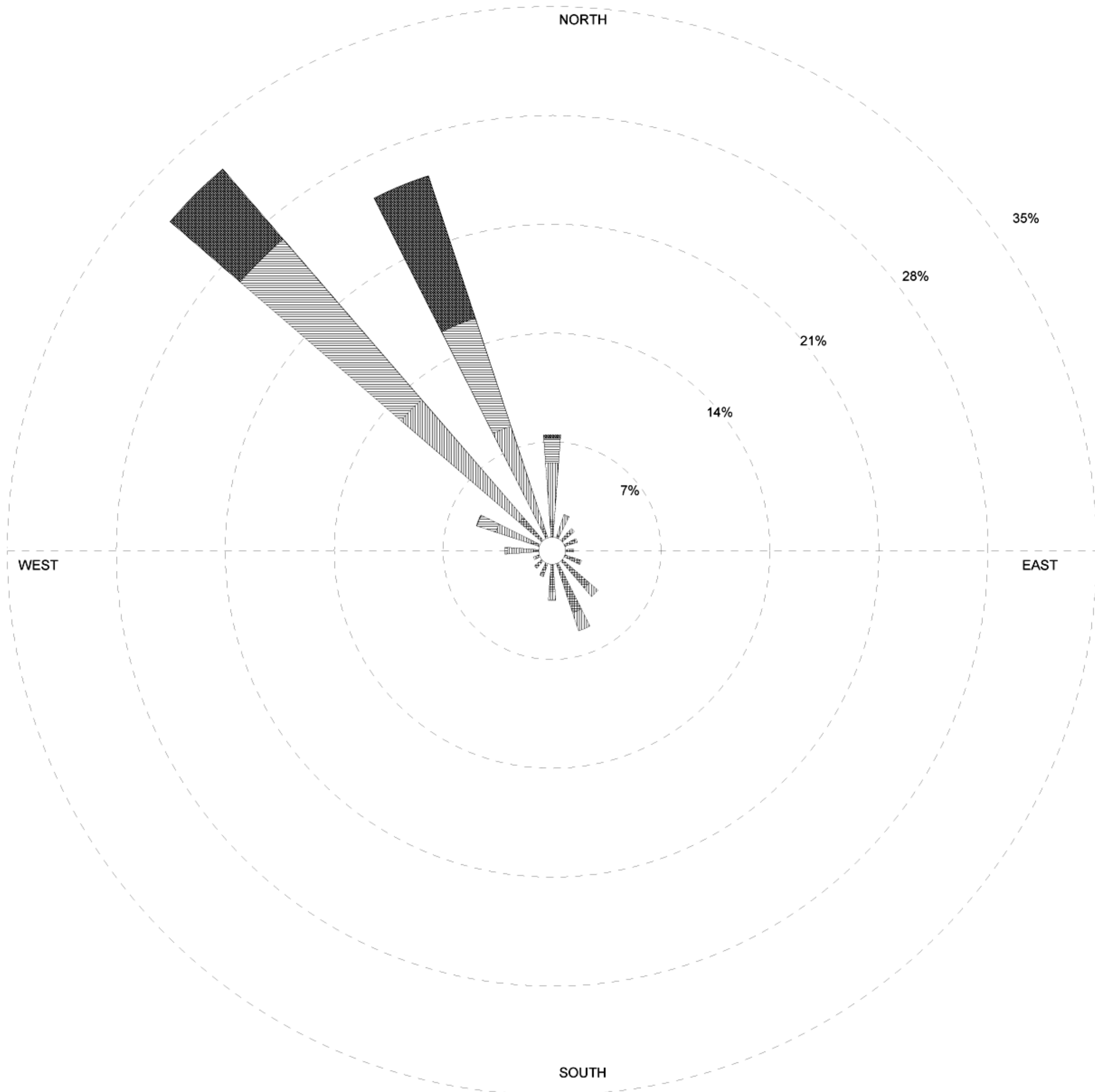
WRPLOT View 3.5 by Lakes Environmental Software - www.lakes-environmental.com

FIGURE 8.1-5c
QUARTERLY WIND ROSE
SECOND QUARTER 1995
APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

D072001001RDD_30 (7/16/01)

CH2MHILL

Station #7905 - ALVISO SEWAGE TREATMENT PLANT SAN JOSE, CA



Wind Speed (m/s)	MODELER	DATE 05/29/2001	COMPANY NAME Sierra Research
> 11.00 8.50 - 11.00 5.50 - 8.50 3.50 - 5.50 2.00 - 3.50 0.50 - 2.00	DISPLAY **Wind Speed**	UNIT **m/s**	COMMENTS
	AVG. WIND SPEED **3.33 m/s**	CALM WINDS **0.00%**	
	ORIENTATION **Direction (blowing from)**	PLOT YEAR-DATE-TIME **1995 Jul 1 - Sep 30 Midnight - 11 PM**	PROJECT/PLOT NO.

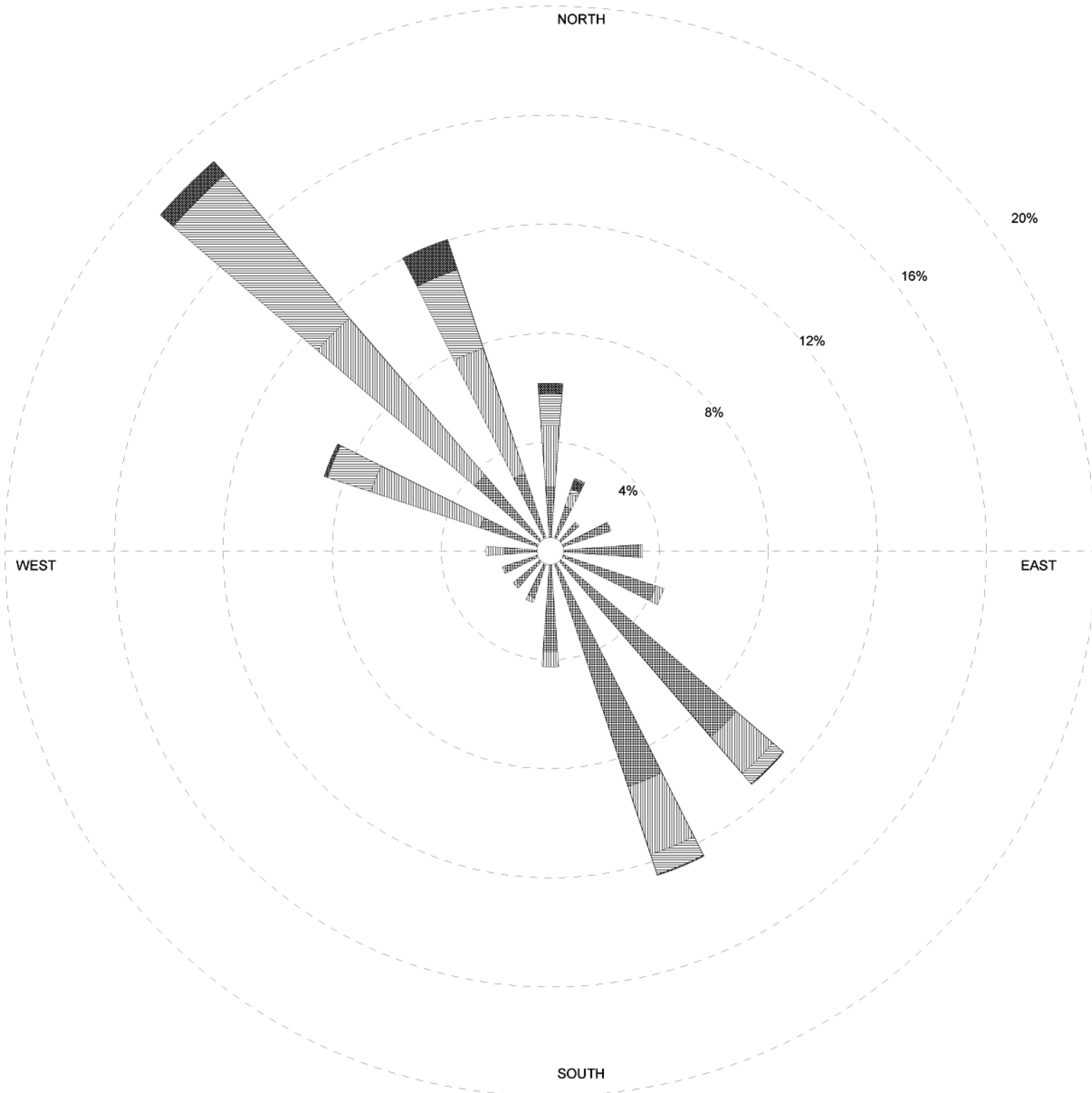
WRPLOT View 3.5 by Lakes Environmental Software - www.lakes-environmental.com

FIGURE 8.1-5d
QUARTERLY WIND ROSE
THIRD QUARTER 1995
APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

D072001001RDD_31 (7/16/01)

CH2MHILL

Station #7905 - ALVISO SEWAGE TREATMENT PLANT SAN JOSE, CA



Wind Speed (m/s)			
> 11.00	MODELER	DATE **05/29/2001**	COMPANY NAME **Sierra Research**
8.50 - 11.00	DISPLAY **Wind Speed**	UNIT **m/s**	COMMENTS
5.50 - 8.50 3.50 - 5.50	AVG. WIND SPEED **2.31 m/s**	CALM WINDS **3.67%**	
2.00 - 3.50 0.50 - 2.00	ORIENTATION **Direction (blowing from)**	PLOT YEAR-DATE-TIME **1995 Oct 1 - Dec 31 Midnight - 11 PM**	PROJECT/PLOT NO.

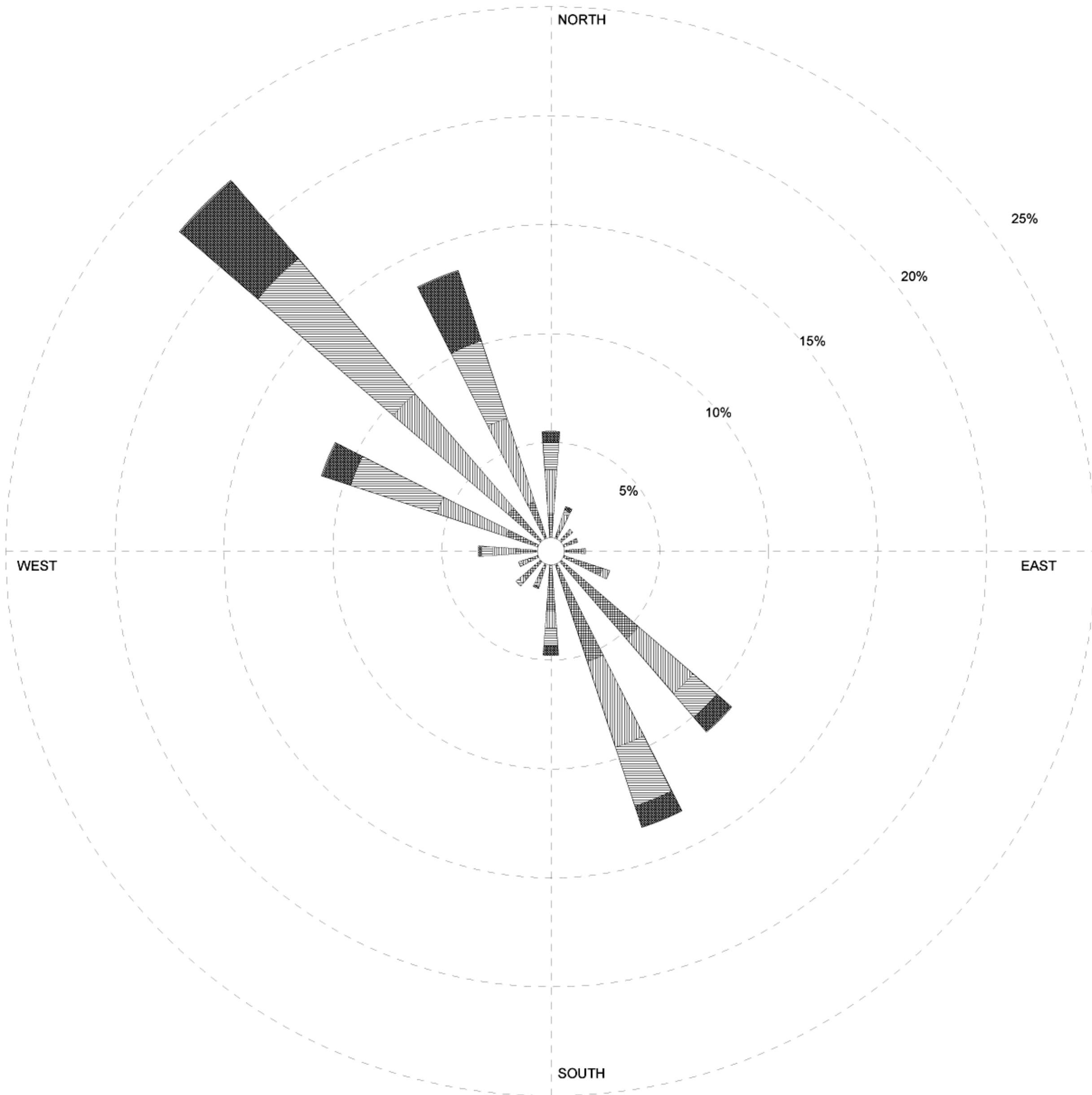
WRPLOT View 3.5 by Lakes Environmental Software - www.lakes-environmental.com

FIGURE 8.1-5e
QUARTERLY WIND ROSE
FOURTH QUARTER 1995
APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

D072001001RDD_32 (7/16/01)

CH2MHILL

Station #7905 - ALVISO SEWAGE TREATMENT PLANT SAN JOSE, CA



Wind Speed (m/s)	MODELER	DATE	COMPANY NAME
> 11.00		**05/29/2001**	**Sierra Research**
8.50 - 11.00	DISPLAY **Wind Speed**	UNIT **m/s**	COMMENTS
5.50 - 8.50	AVG. WIND SPEED **3.14 m/s**	CALM WINDS **0.08%**	
3.50 - 5.50			
2.00 - 3.50	ORIENTATION **Direction (blowing from)**	PLOT YEAR-DATE-TIME **1996 Jan 1 - Dec 31 Midnight - 11 PM**	PROJECT/PLOT NO.
0.50 - 2.00			

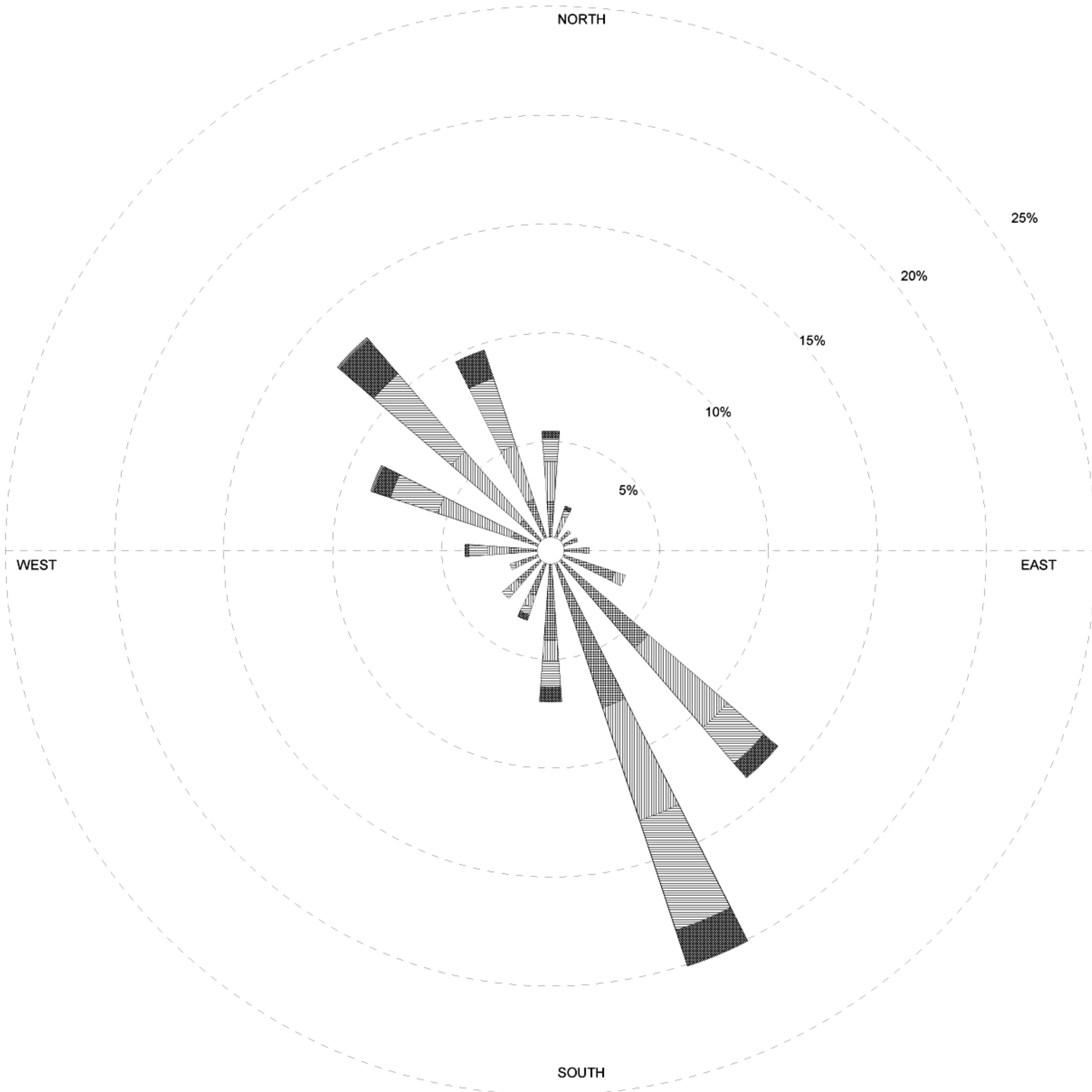
WRPLOT View 3.5 by Lakes Environmental Software - www.lakes-environmental.com

FIGURE 8.1-6a
ANNUAL WIND ROSE 1996
APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

D072001001RDD_33 (7/16/01)

CH2MHILL

Station #7905 - ALVISO SEWAGE TREATMENT PLANT SAN JOSE, CA



Wind Speed (m/s)	MODELER	DATE	COMPANY NAME
> 11.00 8.50 - 11.00 5.50 - 8.50 3.50 - 5.50 2.00 - 3.50 0.50 - 2.00		**05/29/2001**	**Sierra Research**
	DISPLAY **Wind Speed**	UNIT **m/s**	COMMENTS
	AVG. WIND SPEED **2.85 m/s**	CALM WINDS **0.00%**	
	ORIENTATION **Direction (blowing from)**	PLOT YEAR-DATE-TIME **1996 Jan 1 - Mar 31 Midnight - 11 PM**	PROJECT/PLOT NO.

WRPLOT View 3.5 by Lakes Environmental Software - www.lakes-environmental.com

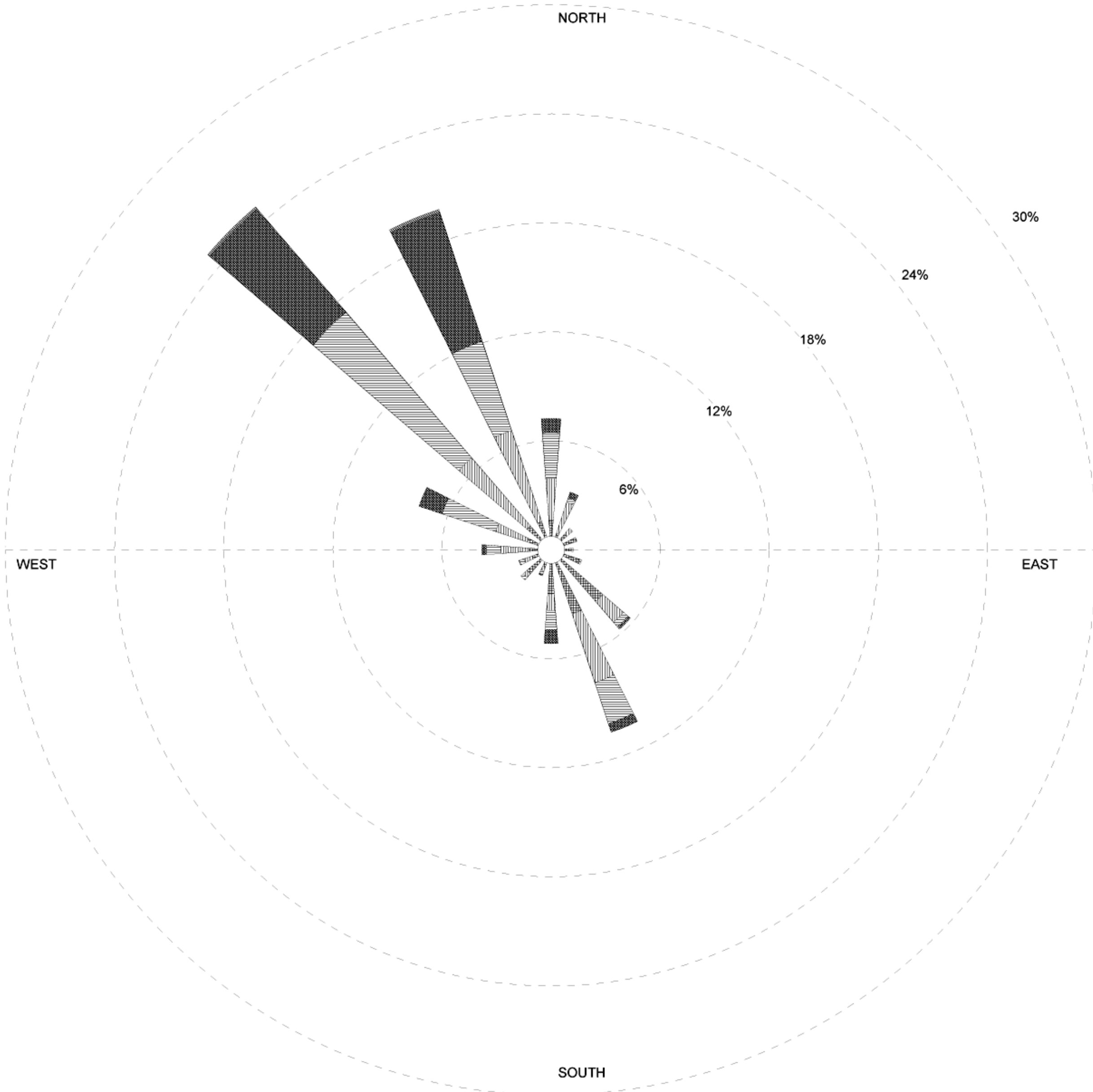
FIGURE 8.1-6b
QUARTERLY WIND ROSE
FIRST QUARTER 1996

APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

CH2MHILL

D072001001RDD_34 (7/16/01)

Station #7905 - ALVISO SEWAGE TREATMENT PLANT SAN JOSE, CA



Wind Speed (m/s)	MODELER	DATE	COMPANY NAME
> 11.00 8.50 - 11.00 5.50 - 8.50 3.50 - 5.50 2.00 - 3.50 0.50 - 2.00		**05/29/2001**	**Sierra Research**
	DISPLAY **Wind Speed**	UNIT **m/s**	COMMENTS
	AVG. WIND SPEED **3.59 m/s**	CALM WINDS **0.14%**	
	ORIENTATION **Direction (blowing from)**	PLOT YEAR-DATE-TIME **1996** **Apr 1 - Jun 30** **Midnight - 11 PM**	PROJECT/PLOT NO.

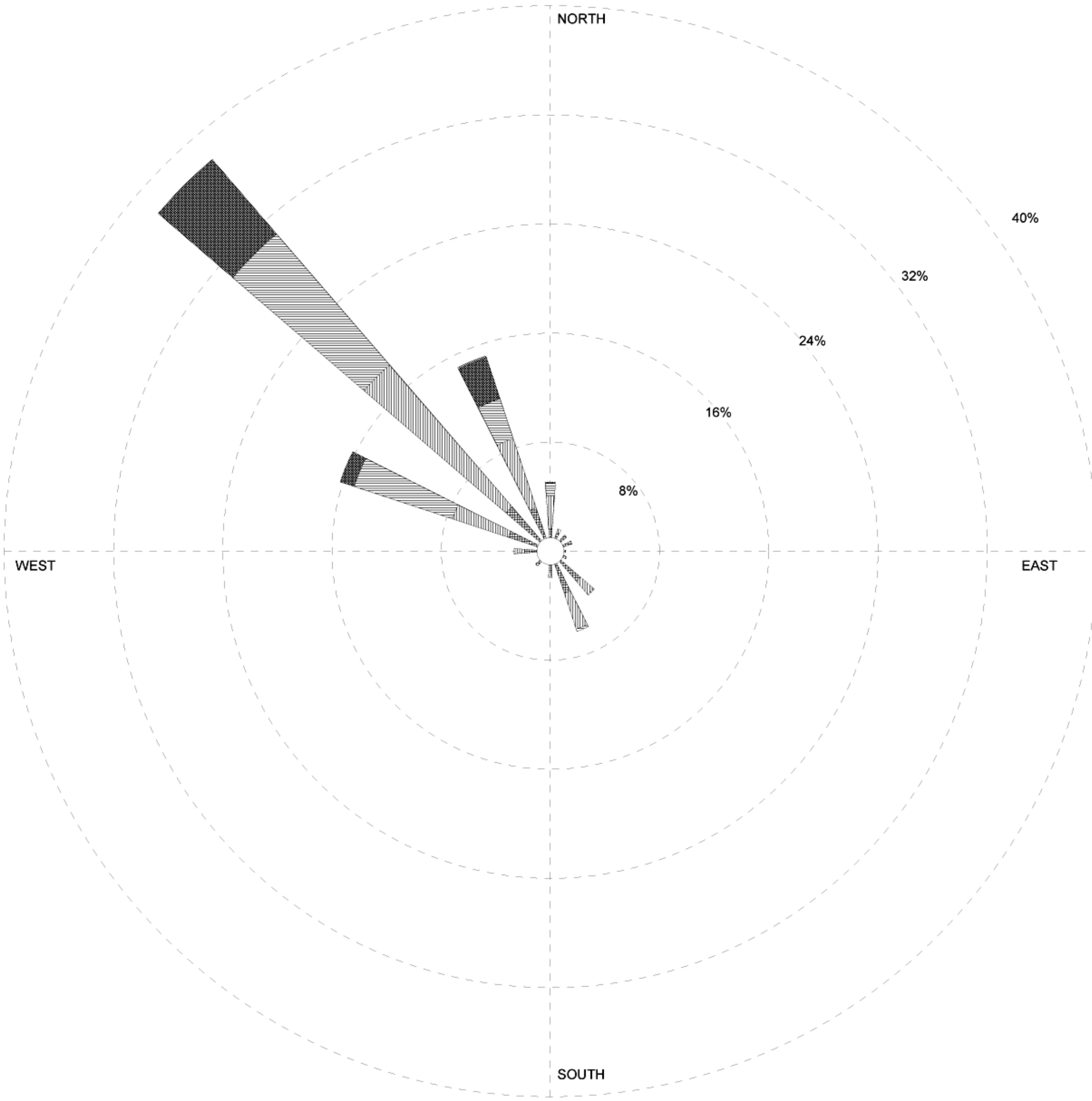
WRPLOT View 3.5 by Lakes Environmental Software - www.lakes-environmental.com

FIGURE 8.1-6c
QUARTERLY WIND ROSE
SECOND QUARTER 1996
APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

CH2MHILL

D072001001RDD_35 (7/16/01)

Station #7905 - ALVISO SEWAGE TREATMENT PLANT SAN JOSE, CA



Wind Speed (m/s)			
> 11.00 8.50 - 11.00 5.50 - 8.50 3.50 - 5.50 2.00 - 3.50 0.50 - 2.00	MODELER	DATE **05/29/2001**	COMPANY NAME **Sierra Research**
	DISPLAY **Wind Speed**	UNIT **m/s**	COMMENTS
	AVG. WIND SPEED **3.14 m/s**	CALM WINDS **0.00%**	
	ORIENTATION **Direction (blowing from)**	PLOT YEAR-DATE-TIME **1996 Jul 1 - Sep 30 Midnight - 11 PM**	PROJECT/PLOT NO.

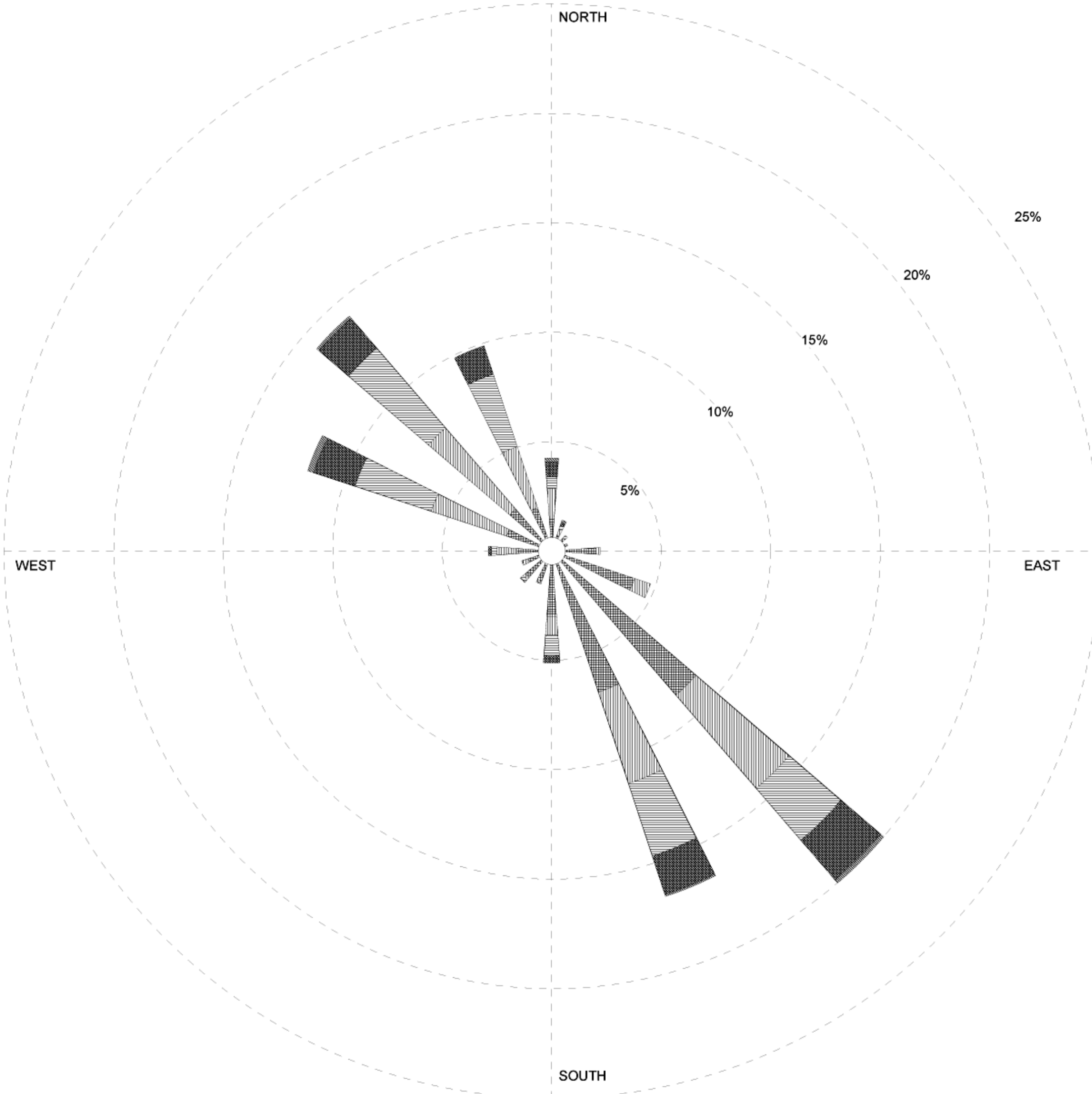
WRPLOT View 3.5 by Lakes Environmental Software - www.lakes-environmental.com

FIGURE 8.1-6d
QUARTERLY WIND ROSE
THIRD QUARTER 1996
APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

CH2MHILL

D072001001RDD_36 (7/16/01)

Station #7905 - ALVISO SEWAGE TREATMENT PLANT SAN JOSE, CA



Wind Speed (m/s)	MODELER	DATE **05/29/2001**	COMPANY NAME **Sierra Research**
> 11.00 8.50 - 11.00 5.50 - 8.50 3.50 - 5.50 2.00 - 3.50 0.50 - 2.00	DISPLAY **Wind Speed**	UNIT **m/s**	COMMENTS
	AVG. WIND SPEED **2.99 m/s**	CALM WINDS **0.18%**	
	ORIENTATION **Direction (blowing from)**	PLOT YEAR-DATE-TIME **1996** **Oct 1 - Dec 31** **Midnight - 11 PM**	PROJECT/PLOT NO.

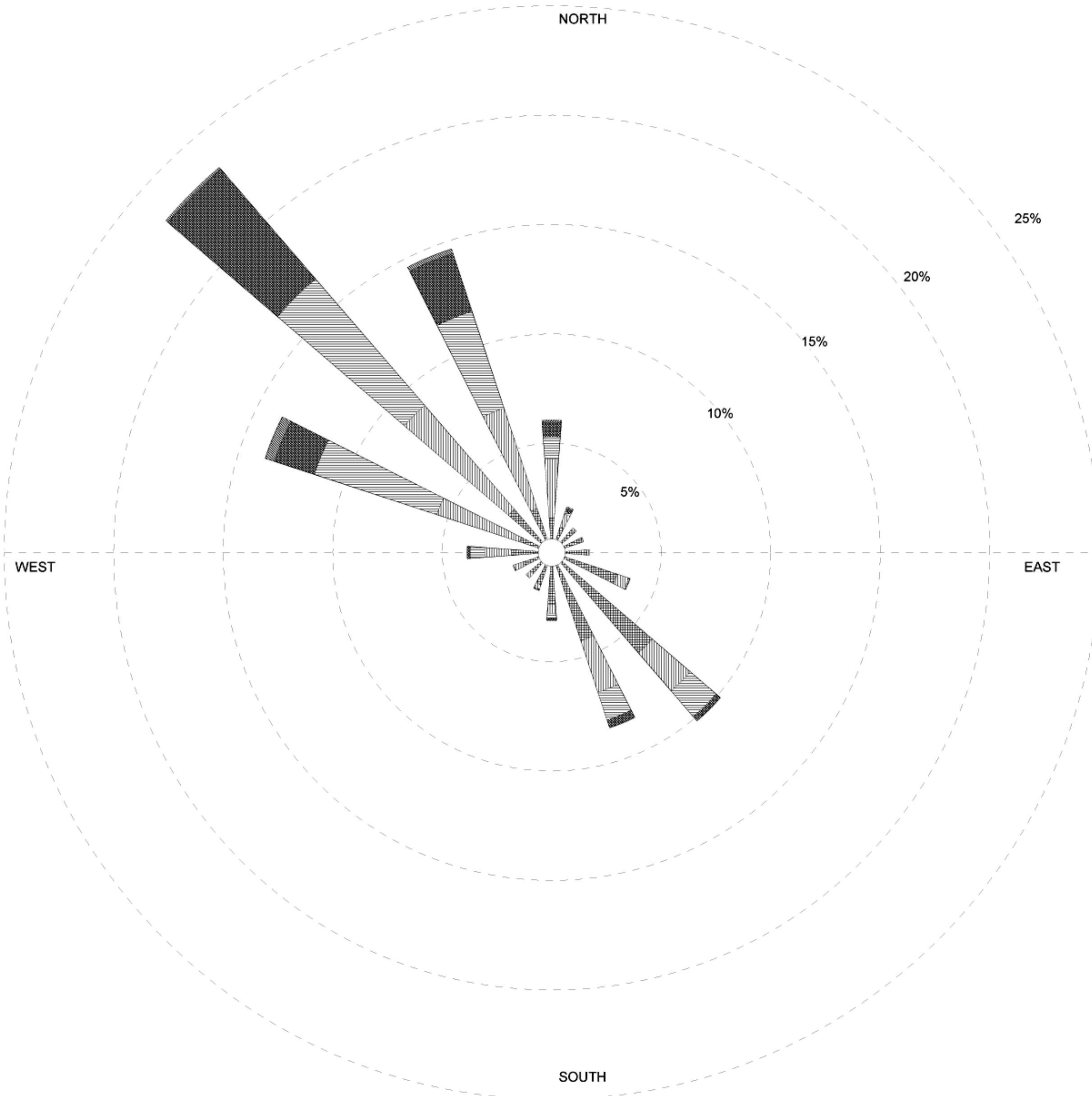
WRPLOT View 3.5 by Lakes Environmental Software - www.lakes-environmental.com

FIGURE 8.1-6e
QUARTERLY WIND ROSE
FOURTH QUARTER 1996
APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

D072001001RDD_37 (7/16/01)

CH2MHILL

Station #7905 - ALVISO SEWAGE TREATMENT PLANT SAN JOSE, CA



Wind Speed (m/s)	MODELER	DATE	COMPANY NAME
> 11.00		**05/29/2001**	**Sierra Research**
8.50 - 11.00	DISPLAY **Wind Speed**	UNIT **m/s**	COMMENTS
5.50 - 8.50	AVG. WIND SPEED **3.22 m/s**	CALM WINDS **0.62%**	
3.50 - 5.50 2.00 - 3.50 0.50 - 2.00	ORIENTATION **Direction (blowing from)**	PLOT YEAR-DATE-TIME **1997** **Jan 1 - Dec 31** **Midnight - 11 PM**	PROJECT/PLOT NO.

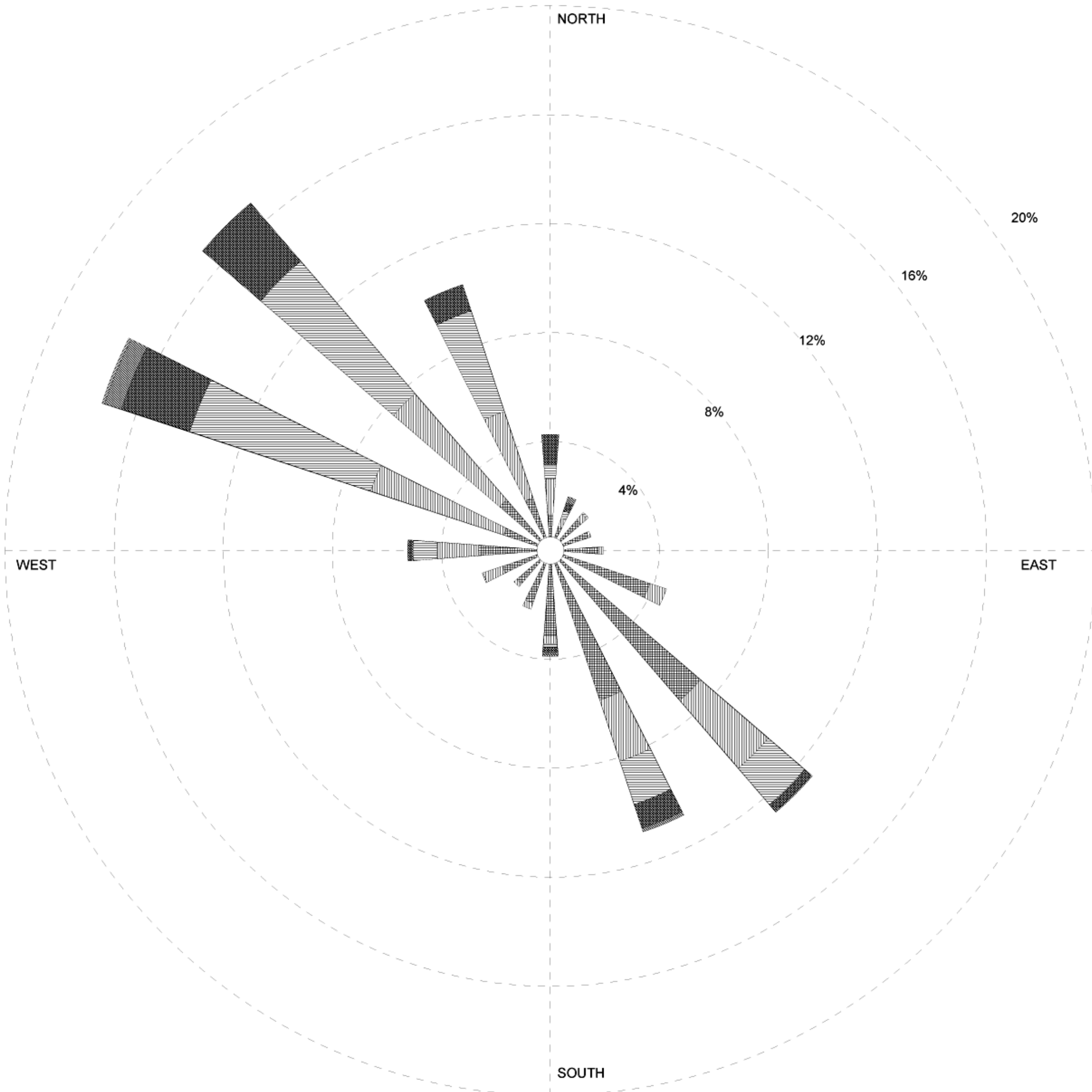
WRPLOT View 3.5 by Lakes Environmental Software - www.lakes-environmental.com

FIGURE 8.1-7a
ANNUAL WIND ROSE 1997
APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

D072001001RDD_38 (7/16/01)

CH2MHILL

Station #7905 - ALVISO SEWAGE TREATMENT PLANT SAN JOSE, CA



Wind Speed (m/s)	MODELER	DATE	COMPANY NAME
> 11.00		05/29/2001	Sierra Research
8.50 - 11.00	DISPLAY **Wind Speed**	UNIT **m/s**	COMMENTS
5.50 - 8.50 3.50 - 5.50	AVG. WIND SPEED **2.99 m/s**	CALM WINDS **0.00%**	
2.00 - 3.50 0.50 - 2.00	ORIENTATION **Direction (blowing from)**	PLOT YEAR-DATE-TIME **1997 Jan 1 - Mar 31 Midnight - 11 PM**	PROJECT/PLOT NO.

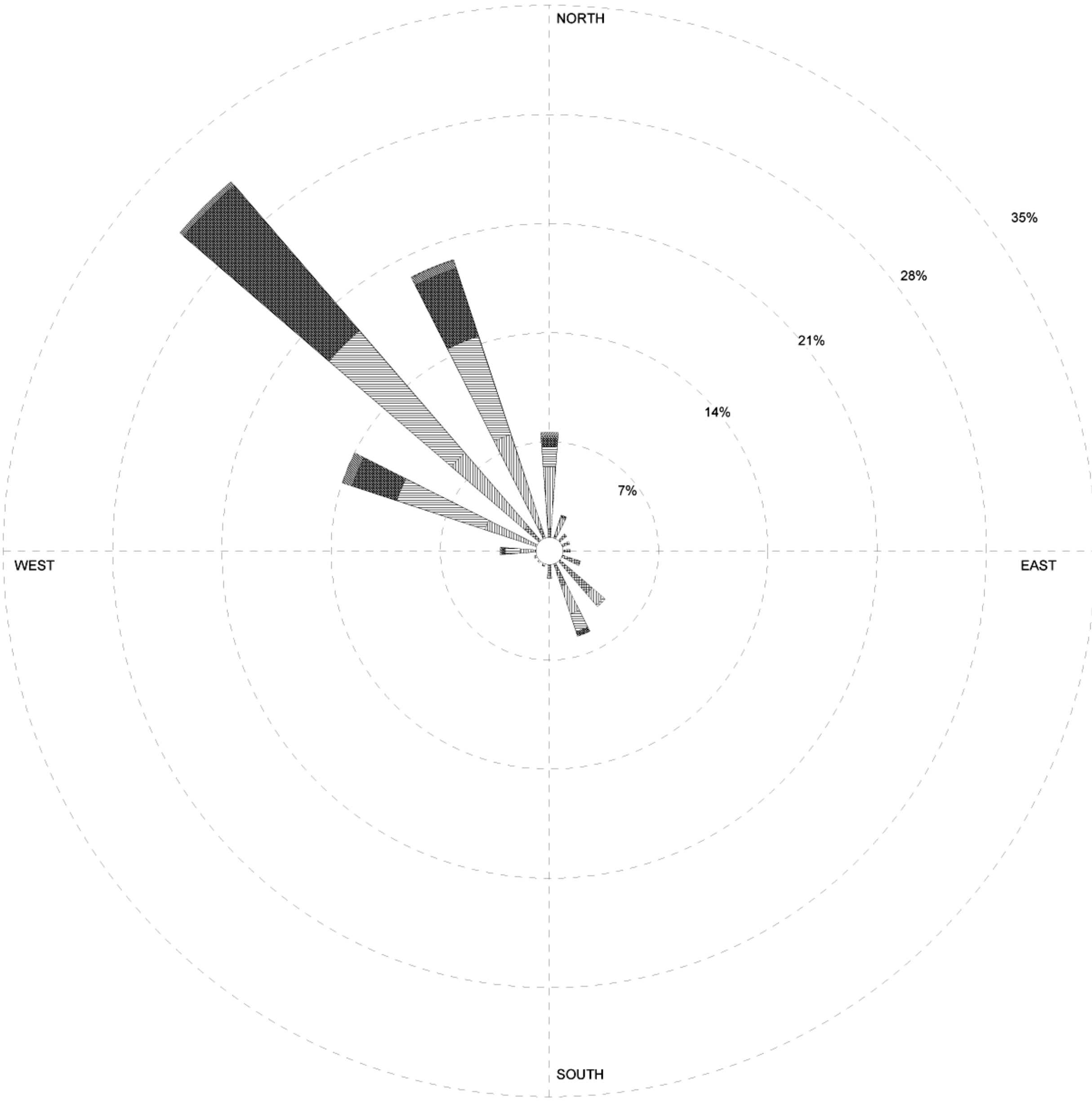
WRPLOT View 3.5 by Lakes Environmental Software - www.lakes-environmental.com

FIGURE 8.1-7b
QUARTERLY WIND ROSE
FIRST QUARTER 1997
APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

D072001001RDD_39 (7/16/01)

CH2MHILL

Station #7905 - ALVISO SEWAGE TREATMENT PLANT   SAN JOSE, CA



Wind Speed (m/s)	MODELER	DATE	COMPANY NAME
> 11.00		05/29/2001	Sierra Research
8.50 - 11.00	DISPLAY: **Wind Speed**	UNIT: **m/s**	COMMENTS
5.50 - 8.50	AVG. WIND SPEED: **3.85 m/s**	CALM WINDS: **0.23%**	
3.50 - 5.50			
2.00 - 3.50	ORIENTATION: **Direction (blowing from)**	PLOT YEAR-DATE-TIME: **1997 Apr 1 - Jun 30 Midnight - 11 PM**	PROJECT/PLOT NO.
0.50 - 2.00			

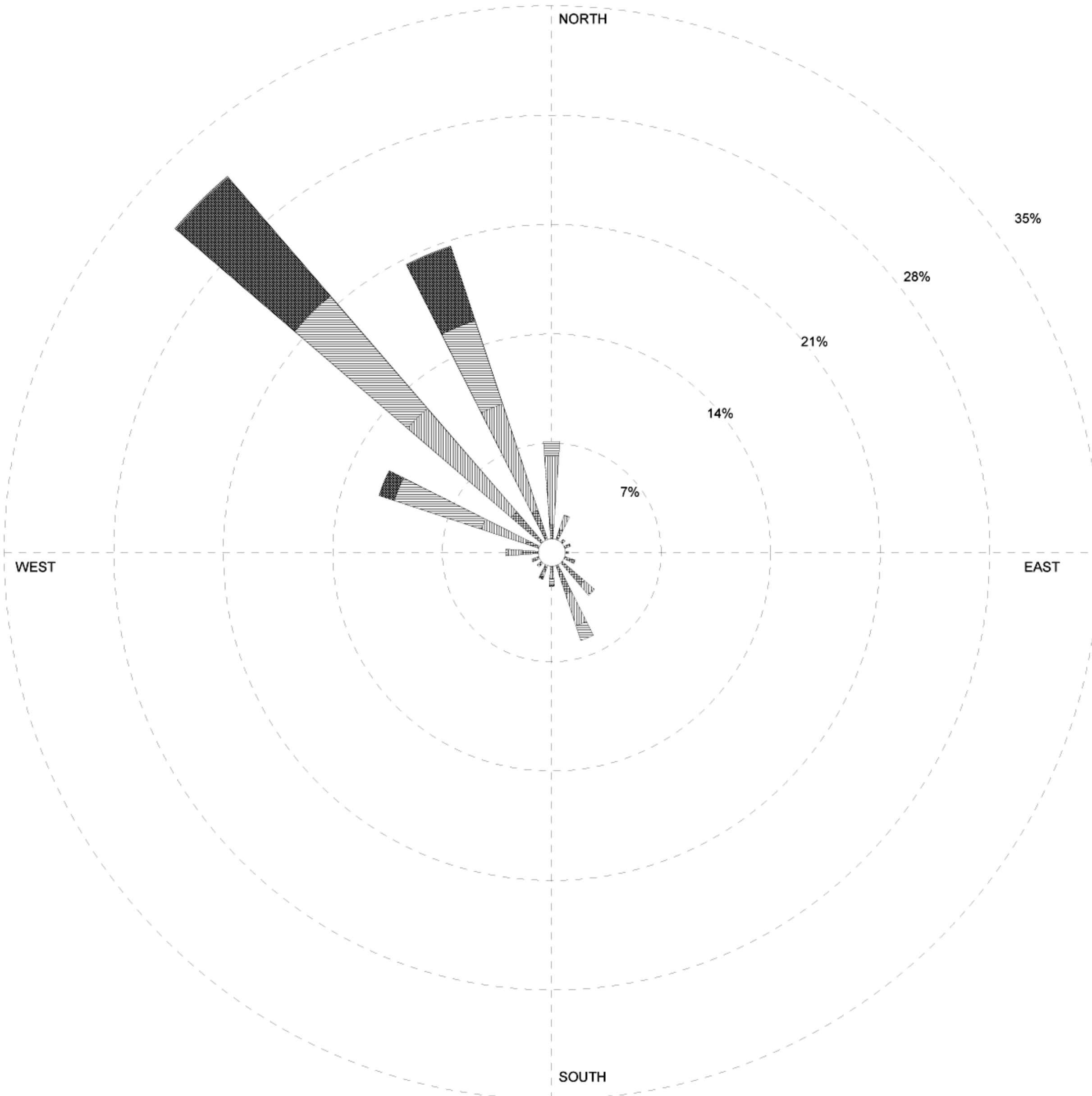
WRPLOT View 3.5 by Lakes Environmental Software - www.lakes-environmental.com

FIGURE 8.1-7c
QUARTERLY WIND ROSE
SECOND QUARTER 1997
APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

D072001001RDD_40 (7/16/01)

CH2MHILL

Station #7905 - ALVISO SEWAGE TREATMENT PLANT SAN JOSE, CA



Wind Speed (m/s)			
> 11.00 8.50 - 11.00 5.50 - 8.50 3.50 - 5.50 2.00 - 3.50 0.50 - 2.00	MODELER	DATE **05/29/2001**	COMPANY NAME **Sierra Research**
	DISPLAY **Wind Speed**	UNIT **m/s**	COMMENTS
	AVG. WIND SPEED **3.39 m/s**	CALM WINDS **2.13%**	
	ORIENTATION **Direction (blowing from)**	PLOT YEAR-DATE-TIME **1997 Jul 1 - Sep 30 Midnight - 11 PM**	PROJECT/PLOT NO.

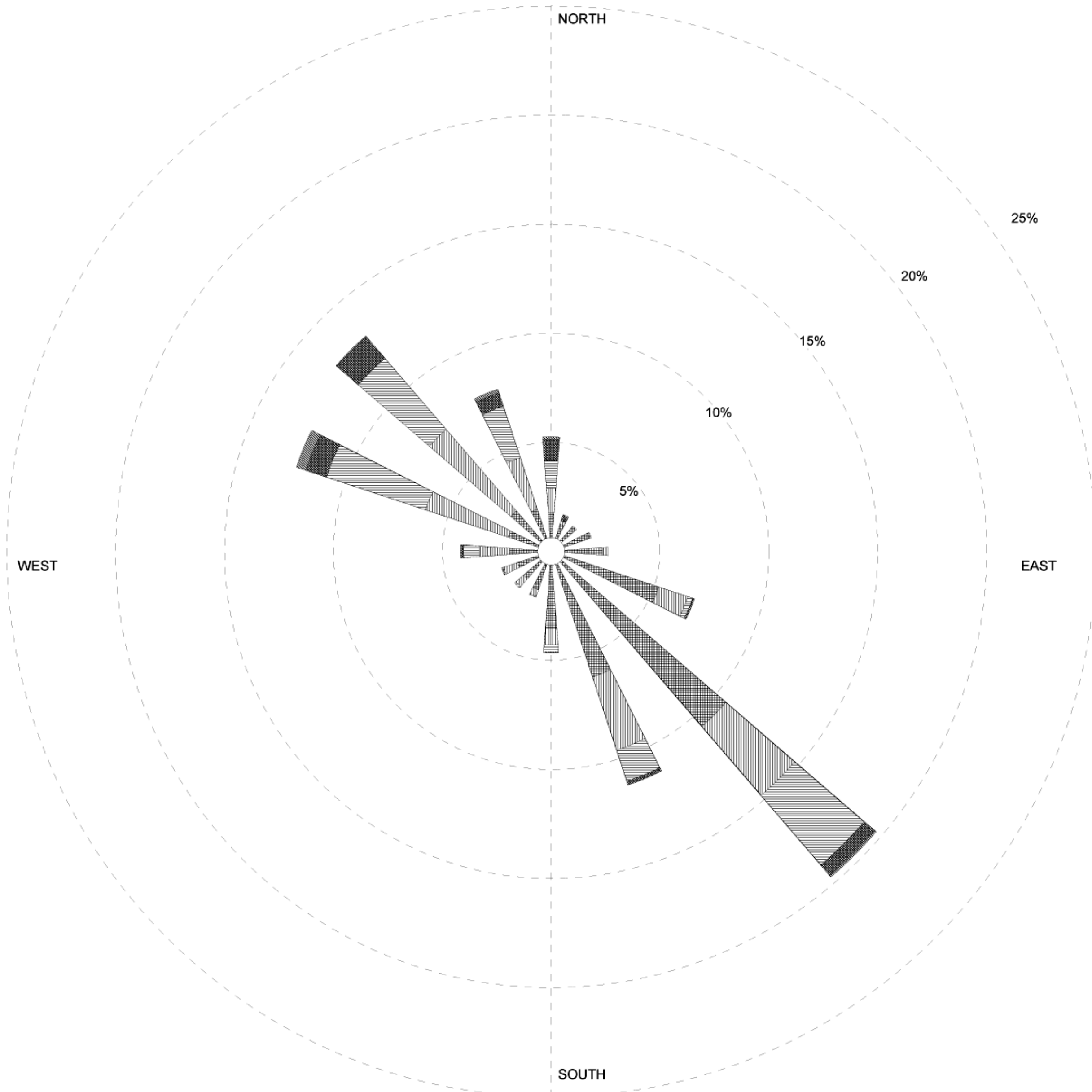
WRPLOT View 3.5 by Lakes Environmental Software - www.lakes-environmental.com

FIGURE 8.1-7d
QUARTERLY WIND ROSE
THIRD QUARTER 1997
APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

D072001001RDD_41 (7/16/01)

CH2MHILL

Station #7905 - ALVISO SEWAGE TREATMENT PLANT SAN JOSE, CA



Wind Speed (m/s)	MODELER	DATE	COMPANY NAME
> 11.00		**05/29/2001**	**Sierra Research**
8.50 - 11.00	DISPLAY **Wind Speed**	UNIT **m/s**	COMMENTS
5.50 - 8.50 3.50 - 5.50	AVG. WIND SPEED **2.65 m/s**	CALM WINDS **0.09%**	
2.00 - 3.50 0.50 - 2.00	ORIENTATION **Direction (blowing from)**	PLOT YEAR-DATE-TIME **1997 Oct 1 - Dec 31 Midnight - 11 PM**	PROJECT/PLOT NO.

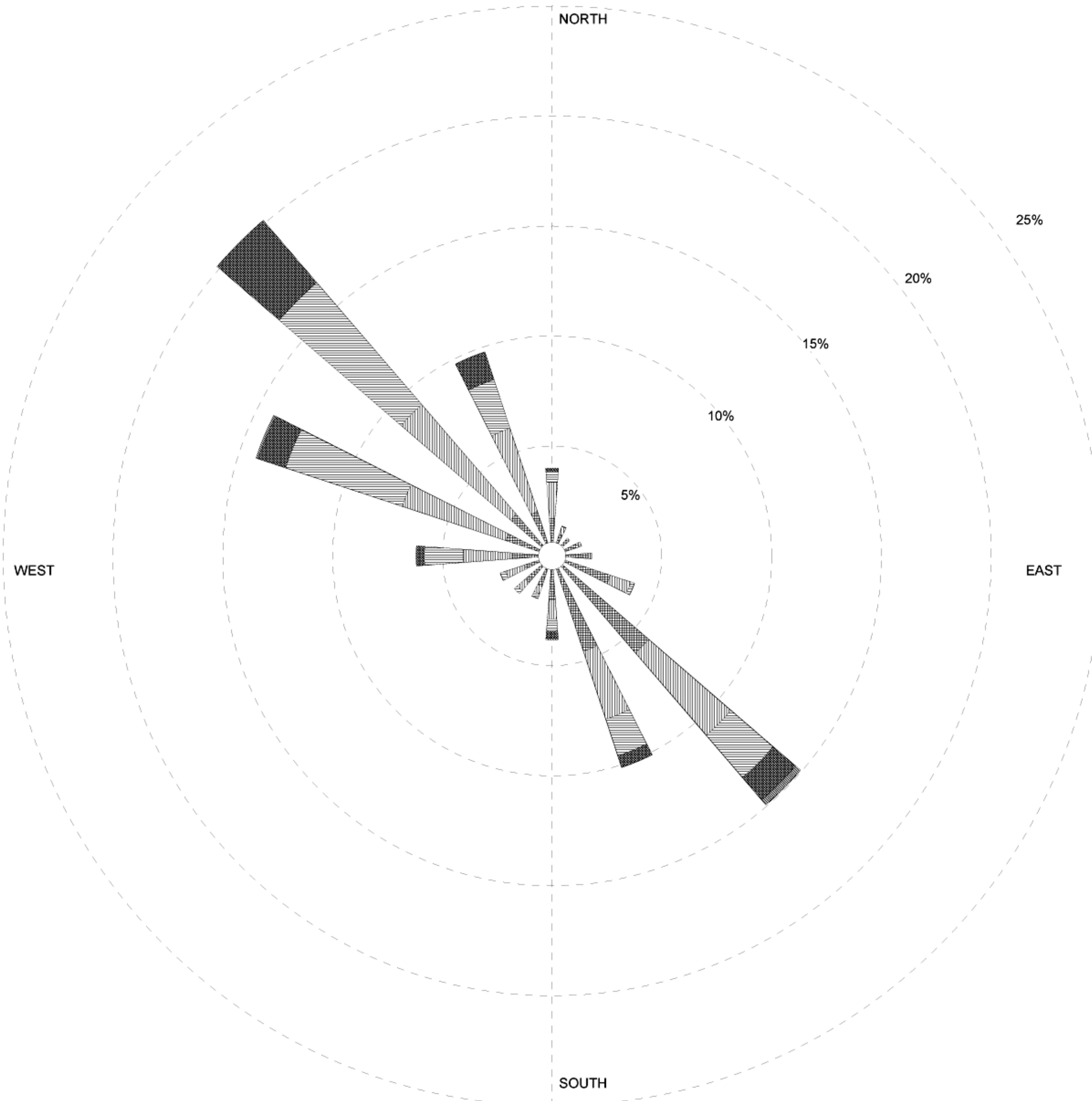
WRPLOT View 3.5 by Lakes Environmental Software - www.lakes-environmental.com

FIGURE 8.1-7e
QUARTERLY WIND ROSE
FOURTH QUARTER 1997
APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

D072001001RDD_42 (7/16/01)

CH2MHILL

Station #7905 - ALVISO SEWAGE TREATMENT PLANT SAN JOSE, CA



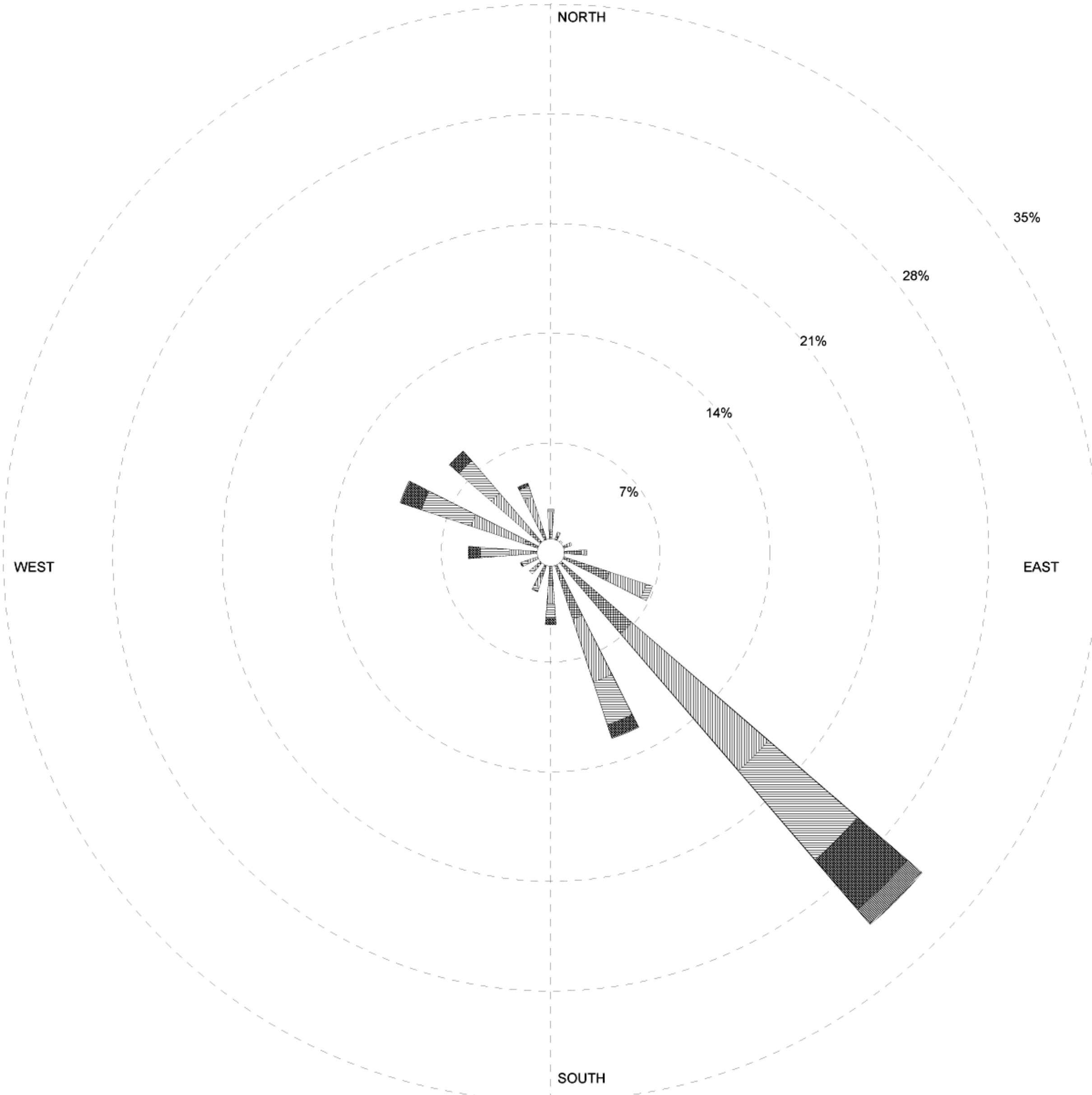
Wind Speed (m/s)	MODELER	DATE	COMPANY NAME
> 11.00 8.50 - 11.00 5.50 - 8.50 3.50 - 5.50 2.00 - 3.50 0.50 - 2.00		**05/29/2001**	**Sierra Research**
	DISPLAY **Wind Speed**	UNIT **m/s**	COMMENTS
	AVG. WIND SPEED **3.01 m/s**	CALM WINDS **0.23%**	
	ORIENTATION **Direction (blowing from)**	PLOT YEAR-DATE-TIME **1998** **Jan 1 - Dec 31** **Midnight - 11 PM**	PROJECT/PLOT NO.

WRPLOT View 3.5 by Lakes Environmental Software - www.lakes-environmental.com

FIGURE 8.1-8a
ANNUAL WIND ROSE 1998
APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

CH2MHILL

Station #7905 - ALVISO SEWAGE TREATMENT PLANT SAN JOSE, CA



Wind Speed (m/s)			
> 11.00 8.50 - 11.00 5.50 - 8.50 3.50 - 5.50 2.00 - 3.50 0.50 - 2.00	MODELER	DATE 05/29/2001	COMPANY NAME Sierra Research
	DISPLAY Wind Speed	UNIT m/s	COMMENTS
	AVG. WIND SPEED 3.07 m/s	CALM WINDS 0.65%	
	ORIENTATION Direction (blowing from)	PLOT YEAR-DATE-TIME 1998 Jan 1 - Mar 31 Midnight - 11 PM	PROJECT/PLOT NO.

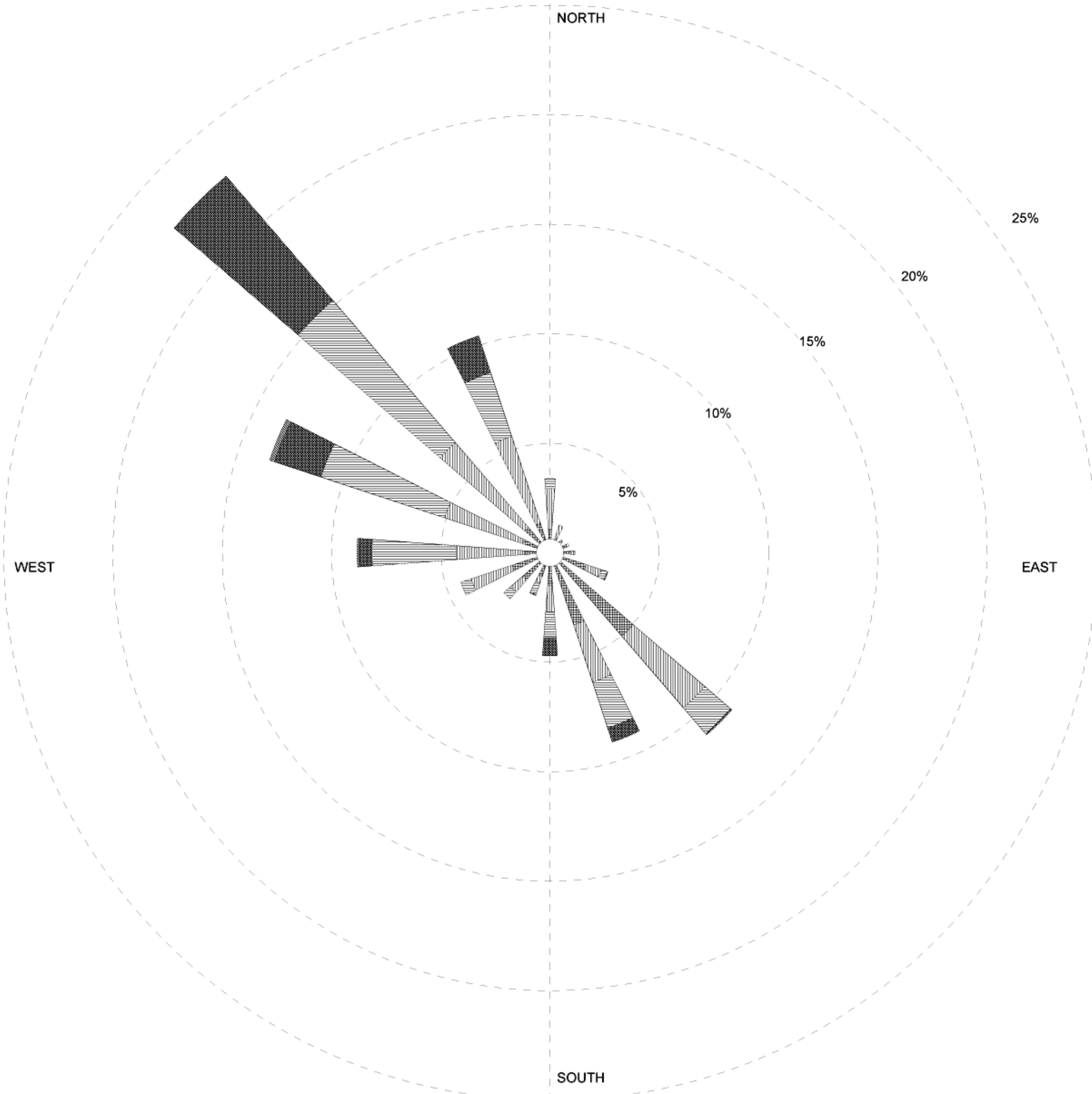
WRPLOT View 3.5 by Lakes Environmental Software - www.lakes-environmental.com

FIGURE 8.1-8b
QUARTERLY WIND ROSE
FIRST QUARTER 1998
APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

D072001001RDD_44 (7/16/01)

CH2MHILL

Station #7905 - ALVISO SEWAGE TREATMENT PLANT SAN JOSE, CA



Wind Speed (m/s)	MODELER	DATE	COMPANY NAME
> 11.00		05/29/2001	Sierra Research
8.50 - 11.00	DISPLAY **Wind Speed**	UNIT **m/s**	COMMENTS
5.50 - 8.50	AVG. WIND SPEED **3.40 m/s**	CALM WINDS **0.18%**	
3.50 - 5.50			
2.00 - 3.50	ORIENTATION **Direction (blowing from)**	PLOT YEAR-DATE-TIME **1998 Apr 1 - Jun 30 Midnight - 11 PM**	PROJECT/PLOT NO.
0.50 - 2.00			

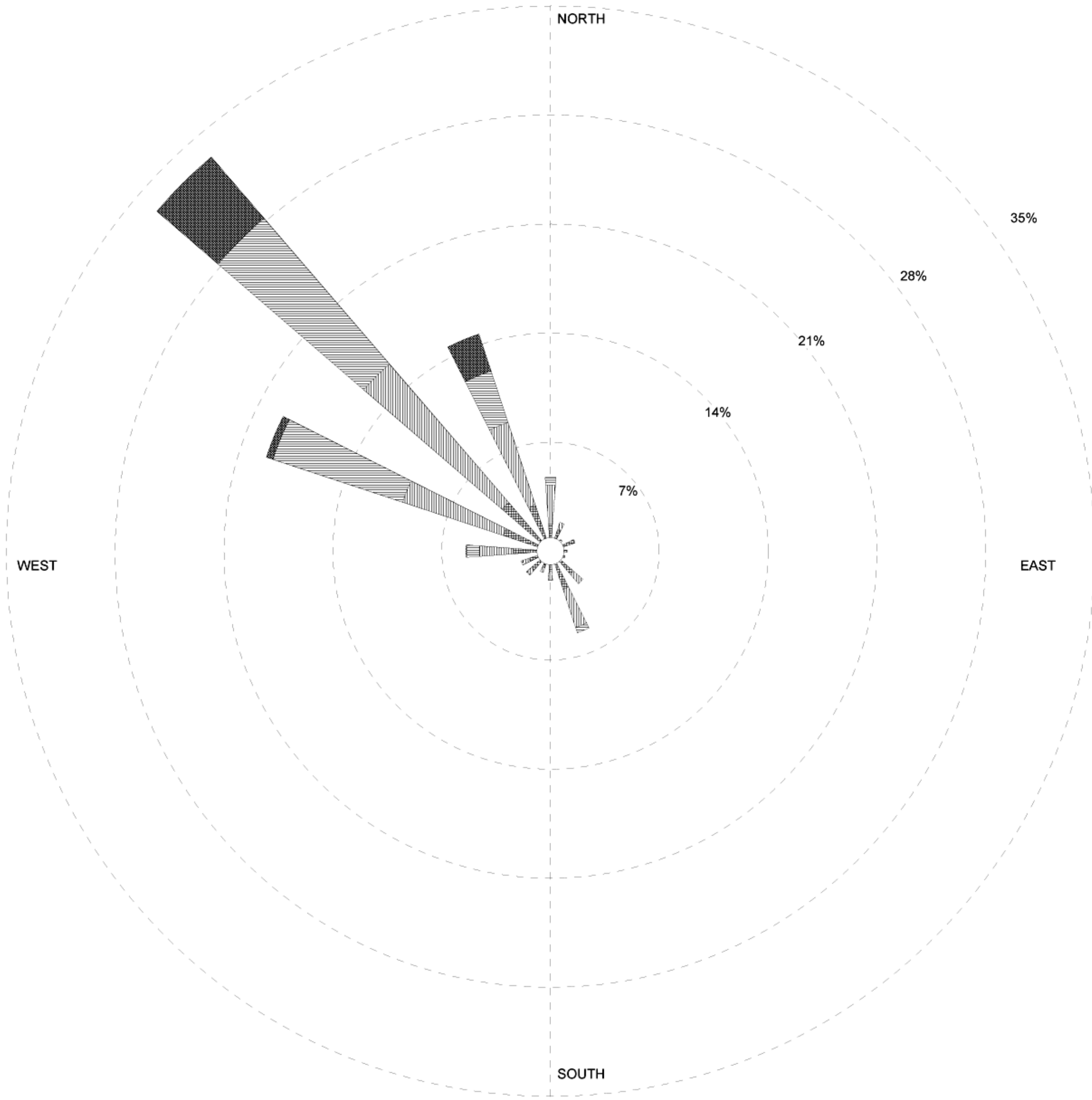
WRPLOT View 3.5 by Lakes Environmental Software - www.lakes-environmental.com

FIGURE 8.1-8c
QUARTERLY WIND ROSE
SECOND QUARTER 1998
APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

D072001001RDD_45 (7/16/01)

CH2MHILL

Station #7905 - ALVISO SEWAGE TREATMENT PLANT SAN JOSE, CA



Wind Speed (m/s)	MODELER	DATE	COMPANY NAME
> 11.00 8.50 - 11.00 5.50 - 8.50 3.50 - 5.50 2.00 - 3.50 0.50 - 2.00		05/29/2001	Sierra Research
	DISPLAY **Wind Speed**	UNIT **m/s**	COMMENTS
	AVG. WIND SPEED **3.04 m/s**	CALM WINDS **0.09%**	
	ORIENTATION **Direction (blowing from)**	PLOT YEAR-DATE-TIME **1998 Jul 1 - Sep 30 Midnight - 11 PM**	PROJECT/PLOT NO.

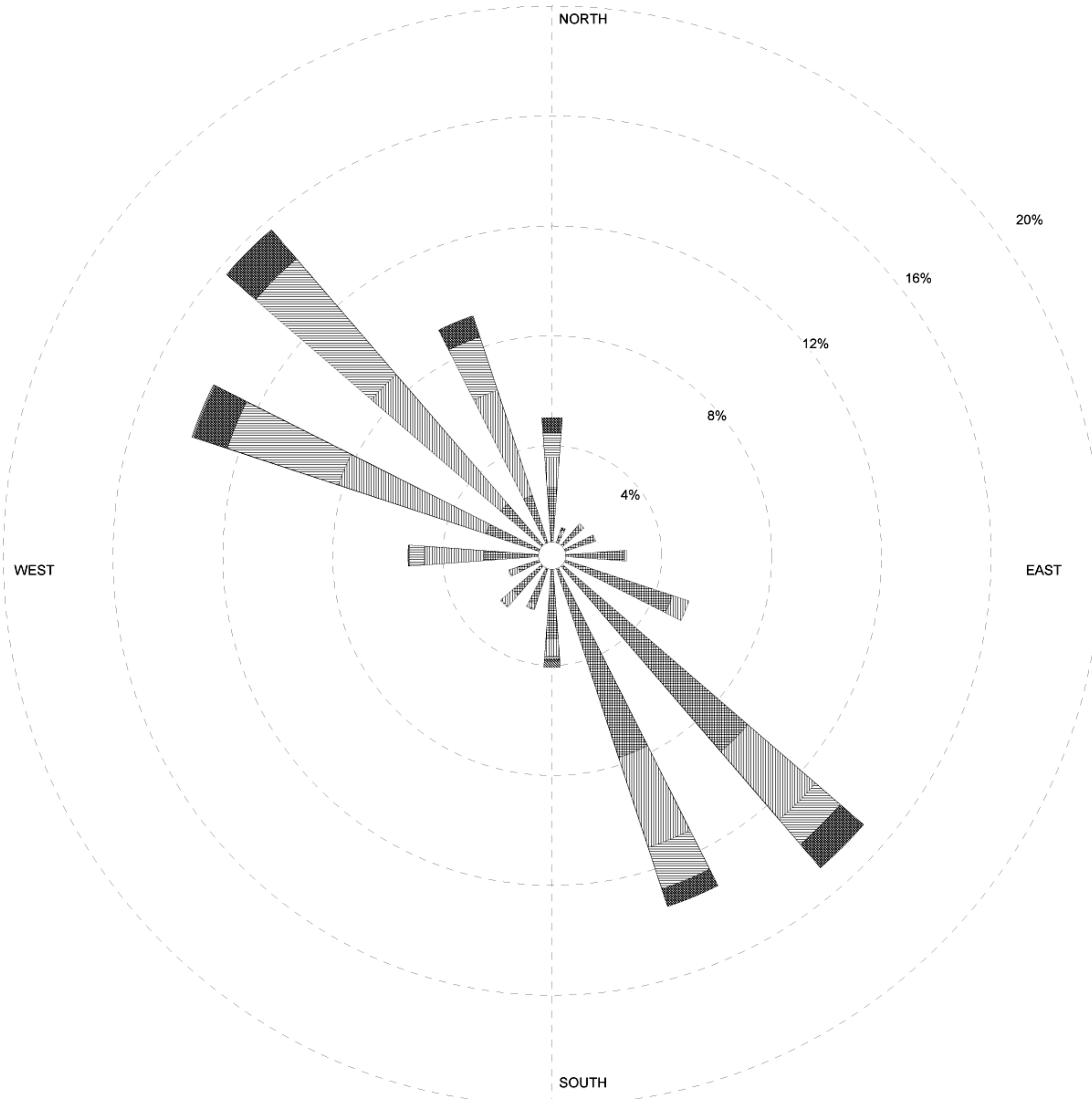
WRPLOT View 3.5 by Lakes Environmental Software - www.lakes-environmental.com

FIGURE 8.1-8d
QUARTERLY WIND ROSE
THIRD QUARTER 1998
APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

D072001001RDD_46 (7/16/01)

CH2MHILL

Station #7905 - ALVISO SEWAGE TREATMENT PLANT SAN JOSE, CA



Wind Speed (m/s)

- > 11.00
- 8.50 - 11.00
- 5.50 - 8.50
- 3.50 - 5.50
- 2.00 - 3.50
- 0.50 - 2.00

MODELER	DATE **05/29/2001**	COMPANY NAME **Sierra Research**
DISPLAY **Wind Speed**	UNIT **m/s**	COMMENTS
AVG. WIND SPEED **2.56 m/s**	CALM WINDS **0.00%**	
ORIENTATION **Direction (blowing from)**	PLOT YEAR-DATE-TIME **1998** **Oct 1 - Dec 31** **Midnight - 11 PM**	PROJECT/PLOT NO.

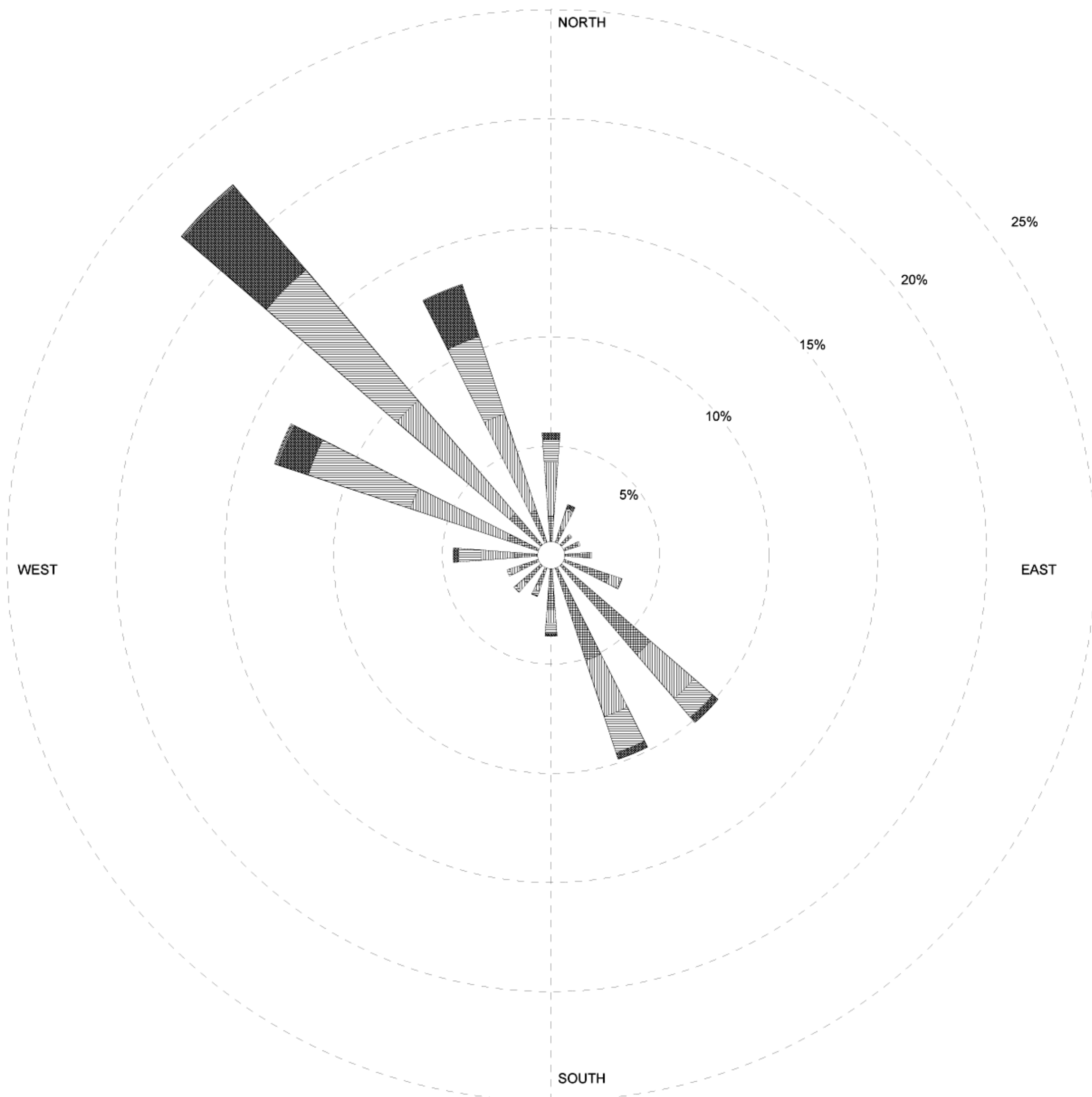
WRPLOT View 3.5 by Lakes Environmental Software - www.lakes-environmental.com

FIGURE 8.1-8e
QUARTERLY WIND ROSE
FOURTH QUARTER 1998
APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

D072001001RDD_47 (7/16/01)

CH2MHILL

Station #7905 - ALVISO SEWAGE TREATMENT PLANT SAN JOSE, CA



Wind Speed (m/s)			
> 11.00 8.50 - 11.00 5.50 - 8.50 3.50 - 5.50 2.00 - 3.50 0.50 - 2.00	MODELER	DATE **05/29/2001**	COMPANY NAME **Sierra Research**
	DISPLAY **Wind Speed**	UNIT **m/s**	COMMENTS
	AVG. WIND SPEED **3.03 m/s**	CALM WINDS **0.49%**	
	ORIENTATION **Direction (blowing from)**	PLOT YEAR-DATE-TIME **1999 Jan 1 - Dec 31 Midnight - 11 PM**	PROJECT/PLOT NO.

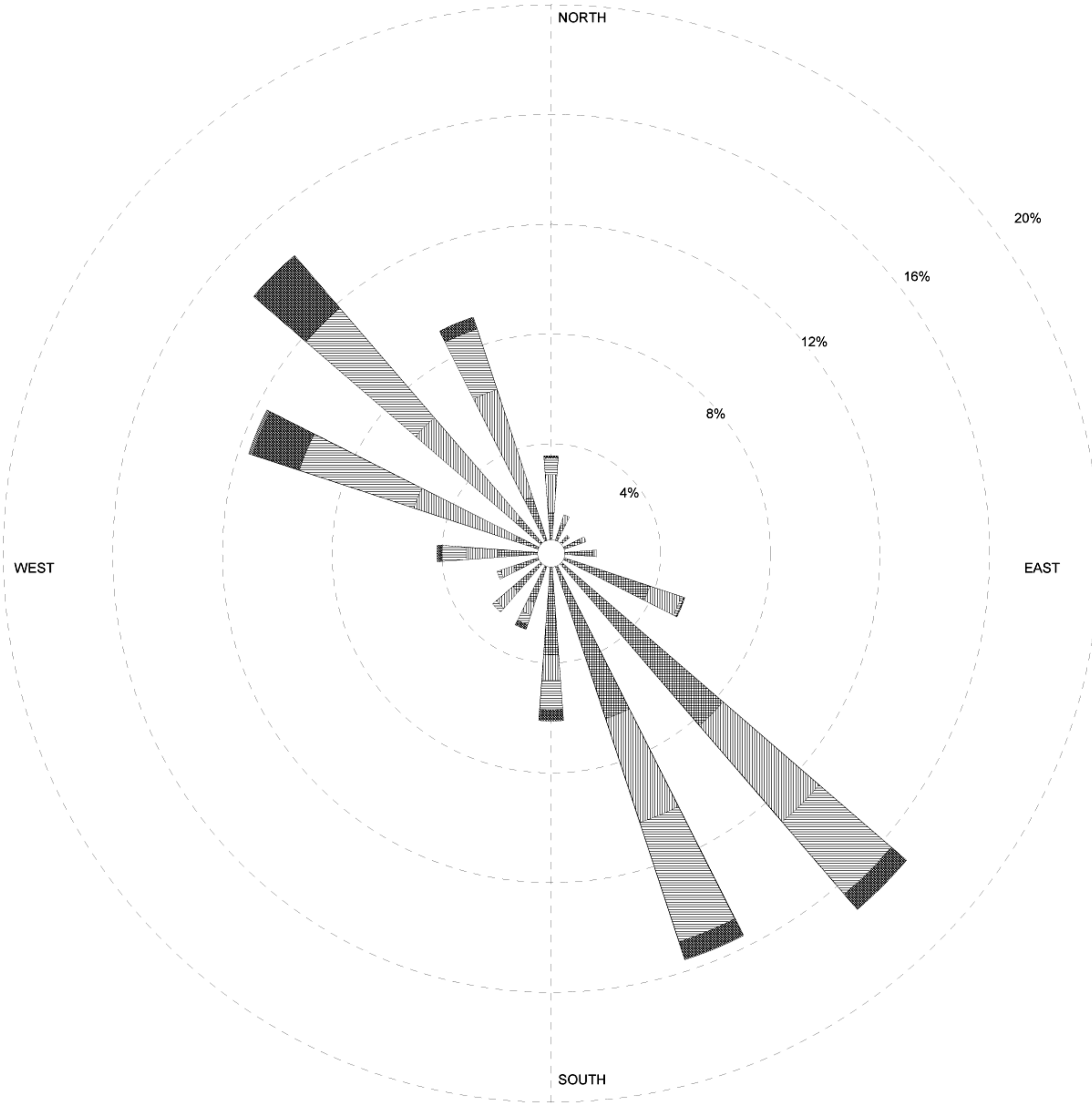
WRPLOT View 3.5 by Lakes Environmental Software - www.lakes-environmental.com

FIGURE 8.1-9a
ANNUAL WIND ROSE 1999
APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

D072001001RDD_48 (7/16/01)

CH2MHILL

Station #7905 - ALVISO SEWAGE TREATMENT PLANT SAN JOSE, CA



Wind Speed (m/s)	MODELER	DATE **05/29/2001**	COMPANY NAME **Sierra Research**
> 11.00 8.50 - 11.00 5.50 - 8.50 3.50 - 5.50 2.00 - 3.50 0.50 - 2.00	DISPLAY **Wind Speed**	UNIT **m/s**	COMMENTS
	AVG. WIND SPEED **2.85 m/s**	CALM WINDS **0.05%**	
	ORIENTATION **Direction (blowing from)**	PLOT YEAR-DATE-TIME **1999** **Jan 1 - Mar 31** **Midnight - 11 PM**	PROJECT/PLOT NO.

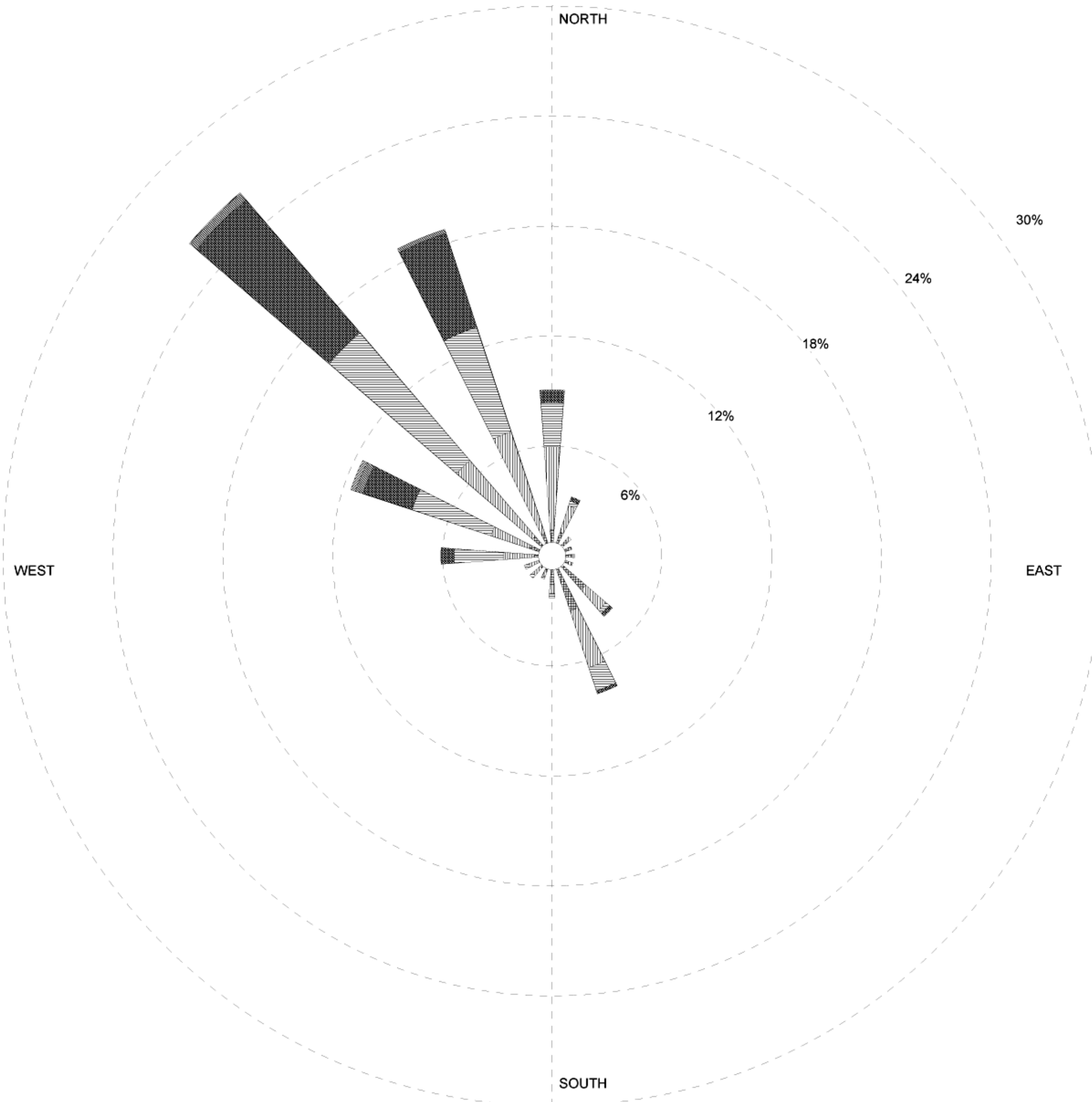
WRPLOT View 3.5 by Lakes Environmental Software - www.lakes-environmental.com

FIGURE 8.1-9b
QUARTDERLY WIND ROSE
FIRST QUARTER 1999
APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

CH2MHILL

D072001001RDD_49 (7/16/01)

Station #7905 - ALVISO SEWAGE TREATMENT PLANT SAN JOSE, CA



Wind Speed (m/s) > 11.00 8.50 - 11.00 5.50 - 8.50 3.50 - 5.50 2.00 - 3.50 0.50 - 2.00	MODELER	DATE **05/29/2001**	COMPANY NAME **Sierra Research**
	DISPLAY **Wind Speed**	UNIT **m/s**	COMMENTS
	AVG. WIND SPEED **3.81 m/s**	CALM WINDS **0.92%**	
	ORIENTATION **Direction (blowing from)**	PLOT YEAR-DATE-TIME **1999 Apr 1 - Jun 30 Midnight - 11 PM**	PROJECT/PLOT NO.

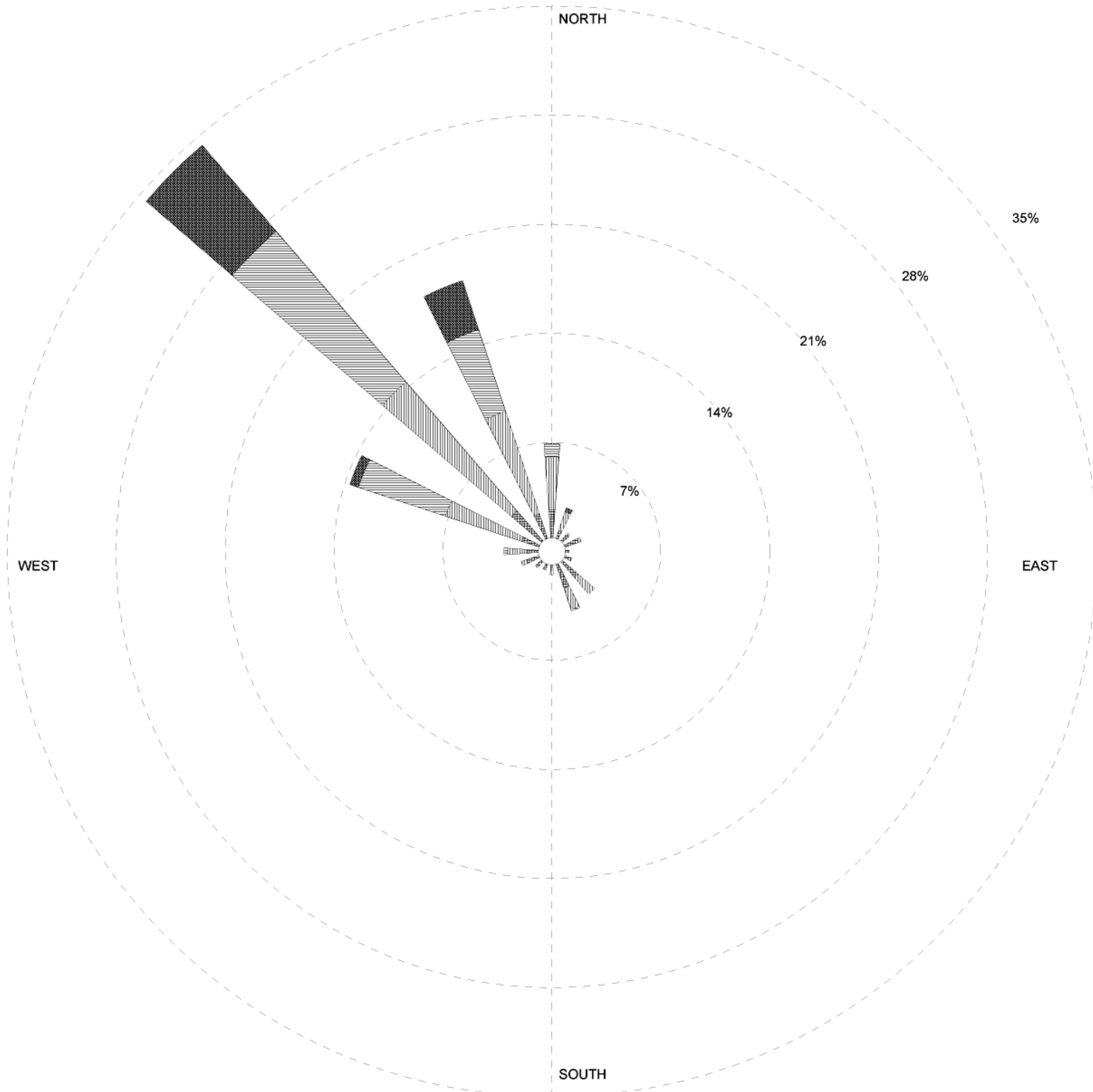
WRPLOT View 3.5 by Lakes Environmental Software - www.lakes-environmental.com

FIGURE 8.1-9c
QUARTDERLY WIND ROSE
SECOND QUARTER 1999
APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

D072001001RDD_50 (7/16/01)

CH2MHILL

Station #7905 - ALVISO SEWAGE TREATMENT PLANT SAN JOSE, CA



Wind Speed (m/s)	MODELER	DATE	COMPANY NAME
> 11.00		05/29/2001	Sierra Research
8.50 - 11.00	DISPLAY **Wind Speed**	UNIT **m/s**	COMMENTS
5.50 - 8.50	AVG. WIND SPEED **3.17 m/s**	CALM WINDS **0.72%**	
3.50 - 5.50 2.00 - 3.50 0.50 - 2.00	ORIENTATION **Direction (blowing from)**	PLOT YEAR-DATE-TIME **1999 Jul 1 - Sep 30 Midnight - 11 PM**	PROJECT/PLOT NO.

WRPLOT View 3.5 by Lakes Environmental Software - www.lakes-environmental.com

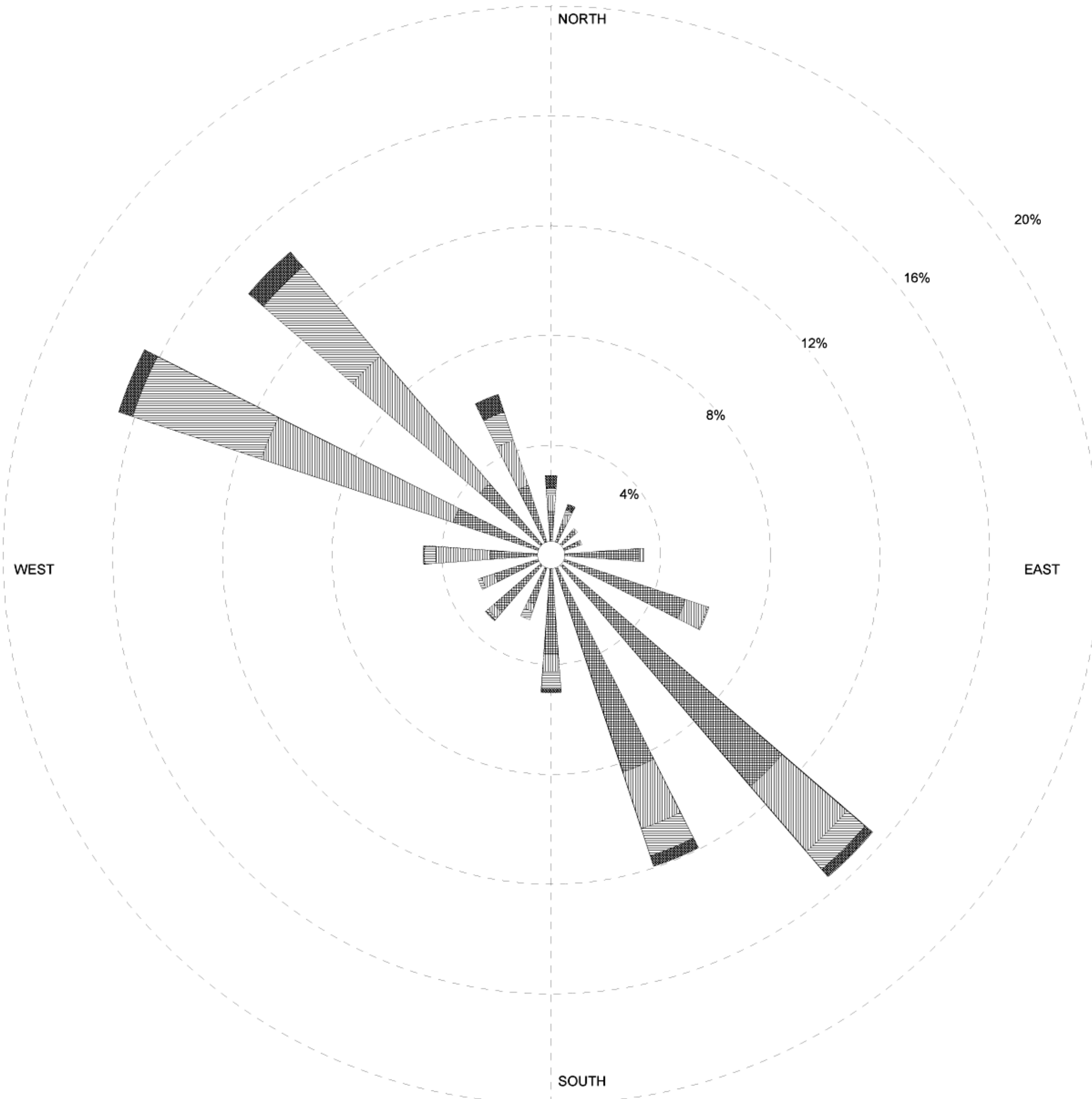
FIGURE 8.1-9d
QUARTDERLY WIND ROSE
THIRD QUARTER 1999

APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

D072001001RDD_51 (7/16/01)

CH2MHILL

Station #7905 - ALVISO SEWAGE TREATMENT PLANT SAN JOSE, CA



Wind Speed (m/s)	MODELER	DATE 05/29/2001	COMPANY NAME Sierra Research
> 11.00	DISPLAY Wind Speed	UNIT m/s	COMMENTS
8.50 - 11.00			
5.50 - 8.50	AVG. WIND SPEED 2.29 m/s	CALM WINDS 0.27%	
3.50 - 5.50			
2.00 - 3.50	ORIENTATION Direction (blowing from)	PLOT YEAR-DATE-TIME 1999 Oct 1 - Dec 31 Midnight - 11 PM	PROJECT/PLOT NO.
0.50 - 2.00			

WRPLOT View 3.5 by Lakes Environmental Software - www.lakes-environmental.com

FIGURE 8.1-9e
QUARTDERLY WIND ROSE
FOURTH QUARTER 1999
APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

CH2MHILL

D072001001RDD_52 (7/16/01)

8.2 Biological Resources

The purpose of this section is to describe sensitive biological resources in the Los Esteros Critical Energy Facility project area (LECEF), potential impacts to those resources associated with construction and operation of the project and linears, and measures identified to mitigate these impacts.

Section 8.2.1 describes the biological resources potentially affected by this project. 8.2.2 describes the environmental consequences of implementing the project. Section 8.2.3 lists the mitigation measures proposed to avoid, minimize and compensate for potential adverse impacts of the project. Section 8.2.4 describes the potential cumulative impacts. Section 8.2.5 provides a list of laws, ordinances, regulations and standards (LORS) pertaining to the project with agency contacts, permits and conformance. Section 8.2.6 lists the references used in developing this analysis.

This project is being proposed as mitigation for the U.S. Dataport Planned Development Rezoning and Prezoning Project (USD project) conditionally approved with over-riding considerations by the City of San Jose. The USD Project included the Central Reliability Energy Center (CREC), composed of 4 dual-fuel-fired 10 MW turbines and 6 oil-fired 1.66 MW emergency engine generators, and the U.S. Dataport Campus including a total of 84, two-MW diesel back up generators for emergency power generation. Because LECEF is a modification, under CEQA, to the USD project, environmental impacts, with mitigation, will be reduced (or remain the same) from previously approved impacts.

8.2.1 Affected Environment

The Affected Environment is described based on a review of recent reports, documents and databases, consultation with federal and state resource agencies and reconnaissance-level surveys to confirm the information provided in previous reports. The site is located entirely within an area that was evaluated in the Draft and Final Environmental Impact Reports for the U. S. Dataport Planned Development Zoning (PDZ) (City of San Jose 2000). The City of San Jose determined that there were significant and unavoidable impacts and made a statement of overriding considerations, pursuant to PRC 15093. That is, the lead agency found the benefits of the proposed project outweighed the unavoidable adverse environmental effects, and therefore found the project effects “acceptable.” Among other items, these overriding considerations specifically addressed issues associated with biological resources (City of San Jose Resolution 70259). The information developed for the DEIR and FEIR forms the basis for the present analysis. Another source of regional information was the AFC developed for the Metcalf Energy Center, which was recently approved. The California Natural Diversity DataBase (CNDDB) was also consulted for records of species observed in the area.

Reconnaissance-level field surveys for biological resources, wetlands, and significant trees were conducted by HT Harvey & Associates biologists on April 11, 2000 (City of San Jose 2000). A protocol level survey for Congdon’s tarplant was performed on July 24, 2000. Surveys for birds and burrowing owls were conducted on June 14, 20, and 27, 2000. Surveys covered the project site designated in the EIR, which includes the LECEF project site. Survey personnel were: restoration ecologist Regine Castelli, M.S., botanist Janet Klein, M.S. and wildlife ecologist Naomi Nichol, M.S.

Additional visual reconnaissance surveys of the LECEF site were performed by Jaque Forrest, Senior Biologist and Christine Kohl-Zaugg, Environmental Scientist (CH2M Hill) on June 13, 2001 to confirm the site conditions and the habitat descriptions. Resumes of the HT Harvey surveyors were not presented in the EIR and are not available. Resumes of Ms. Forrest and Kohl-Zaugg are included in Appendix 8.2A. None of the surveys detected species of concern to the CNDDB, and therefore no survey forms were submitted.

8.2.1.1 Habitats

Habitats on and adjacent to the project site are described below and shown in Figure 8.2-1. Special Status Species localities are shown in Figure 8.2-2, and the location of serpentine habitats southeast of the project are shown in Figure 8.2-3. These include both sensitive habitats and those that are considered regionally common.

Ruderal

The LECEF site (15.3 acres) is dominated by common introduced species such as mustard, anise, cheeseweed, wild radish, bristly ox-tongue, cheeseweed, Italian thistle, charlock, wild radish, harding grass, red foxtail chess, and red-leaf filaree are dominant. The site was formerly used as a nursery and there are some greenhouses and some landscape species present as inclusions in the generally ruderal habitat. There are no wetlands on the project site (WRA 2000).

Within a one-mile radius of the site, the surrounding land use is primarily open space and riparian corridors, agriculture, residential housing, and small commercial developments. West of the LECEF site is WPCP buffer lands, northwest of the site is the Water Pollution Control Plant, and north of the site are WPCP sludge drying ponds. With the exception of riparian habitat, none of these areas has high value as biological habitat.

Urban and Developed

Most of the area east of Coyote Creek, and south of the project site is covered with urban and developed habitat. Commercial and industrial sites tend to be paved, covered with buildings or packed earth. The only vegetation tends to be landscape trees, shrubs and lawns in residential areas. This habitat has limited value for wildlife and supports only common and widespread species.

Riparian

The LECEF project site is located 1,000 feet west of Coyote Creek, a natural stream channel which flows north to the South San Francisco Bay. This reach of Coyote Creek has packed earth levees adjacent to the flood control bypass along the entire eastern boundary of the site. Coyote Creek supports a narrow band of mature native woody vegetation including Fremont cottonwood, red willow, box elder, coast live oak, arroyo willow, western sycamore, and black walnut. Shrub and herbaceous species throughout the riparian corridor include blue elderberry, mulefat, snowberry, California blackberry, poison oak, mugwort, and wild cucumber. Non-native vegetation present along this reach of the creek includes Himalayan blackberry, milk thistle, curly dock, and fumaria.

Agricultural

Agricultural lands, comprising primarily pasture and hay crops dominate the area surrounding the project site. A large portion of the pre-existing on-site nursery was used for intensive row-crops of flowers, landscape shrubs and various ornamentals. These tend to be heavily managed, including keeping the area weed free through hoeing, herbicide applications or ground cover. As a result, the row crop area is much lower in habitat value than would be typical for row crops.

Serpentine

The nearest serpentine habitat is located 12 miles southeast of the project site. However, there is recent evidence that serpentine habitats are sensitive to nitrogen compounds emitted from combustion processes even at relatively long distances. Because serpentine habitats are nutrient-limited, there is a potential that additional nitrogen can have a fertilizing effect resulting in the transformation of serpentine habitats, and consequent adverse impacts on the species that depend on them. The location of serpentine habitats southeast of the project area are shown in Figure 8.2-3.

8.2.1.2 Wildlife

Wildlife species that use the ruderal and developed habitats tend to be common, widespread and opportunistic species that are highly adaptable to disturbed conditions. Because much of the site was previously developed, soils have been disturbed and compacted and vegetation removed historically. This makes the site even less suitable for any but highly opportunistic species. Ruderal habitats provide seeds, and early in the spring provide green vegetation and insects for small birds, mammals and a few reptiles. The absence of wetlands on the site make it generally unsuitable for amphibians, and because it is located 1,000 feet from Coyote Creek, it is likely to support few if any amphibians in upland habitats.

Wildlife typical of ruderal habitats include Brewers and red winged blackbirds, European starlings, song sparrows, goldfinch, pocket gophers, house mice, gopher snakes, yellow-bellied racers, western fence lizard and western skink. Large predatory species such as harriers, red-tailed hawks, great horned owls and coyotes may forage over the area, though the site is probably not suitable to support these species as residents.

8.2.1.3 Special-Status Species

Special-status species that potentially occur in the project area were identified from data in the DEIR/FEIR and comprised lists provided by the Coyote Creek Riparian Research Station, U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Game's CNDDB, and the CNPS electronic inventory (City of San Jose 2000). In addition, the CEC identified bay checkerspot butterfly as being potentially affected by a similar project located east of LECEF, and therefore this species is also included. The species identified from these lists are shown in Table 8.2.1, along with their protected status, habitat requirements and potential for occurring on the project site. A figure showing the location of known CNDDB records is provided in Figures 8.2-2. The result of the CNDDB record search is contained in Appendix 8.2B.

TABLE 8.2-1
Special-Status Species Potentially Occurring on LECEF-Project Site

Common Name	Scientific Name[1]	Status[2] (Fed/CA)	Season[3]	Primary Habitat[4]	Observed[5]	Comments
Plants						
Contra Costa goldfields	*Lasthenia conjugens*	E/1B	May-June	Mesic annual grassland and vernal pools	U	Species is considered to occur in only 4 localities, identified by intensive surveys in 1993. May have occurred historically, but not known currently from the project area
Congdon's tarplant	*Hemizonia parryi ssp. congdonii*	—/IB	June-November	Valley and foothill grasslands	S	Site was surveyed on July 24, 2000 with negative results.
Alkali milk-vetch	*Astragalus tener var tener*	—/1B	March-June	Playas, valley grasslands and vernal pools.	U	Site is heavily developed, lacking playas, natural grasslands or vernal pools that would support this species.
Robust spineflower	*Chorizanthe robusta var robusta*	E/1B	May-September	Cismontane woodlands, coastal dunes and coastal scrub.	U	Site is heavily developed, lacking suitable habitats to support this species.
Point Reyes bird's beak	*Cordylanthus maritimus ssp. palustris*	—/1B	June-October	Coastal salt marsh	U	Site is heavily developed, lacking suitable habitats to support this species.
Congdon's tarplant	*Hemizonia parryi ssp. congdonii*	—/IB	June-November	Valley and foothill grasslands	S	Site was surveyed on July 24, 2000 with negative results.
Invertebrates						
Vernal Pool Tadpole Shrimp	Lepidurus packardi	E/—	Resident	Known from salt evaporators west of Fremont and San Francisco Bay NWR	U	No wetlands on site to support this species.
Bay Checkerspot butterfly	Euphydryas editha bayensis	T/—	Resident	Depends on plant species endemic to serpentine bunch grass habitat	U	Occurs on Coyote Ridge, approximately 12 miles south.east of project in serpentine outcrops on hillside.
Fish						
Fall/late fall-run chinook salmon	*Oncorhynchus tshawytscha*	PT/—	Migratory	Streams and rivers connected to ocean.	U	Occurs in Coyote Creek during spawning migration. Remote from project site.
Steelhead Rainbow Trout	*Oncorhynchus mykiss*	T/—	Migratory	Streams and rivers connected to ocean.	U	Occurs in Coyote Creek during spawning migration. Remote from project site.

TABLE 8.2-1
Special-Status Species Potentially Occurring on LECEF-Project Site

Common Name	Scientific Name[1]	Status[2] (Fed/CA)	Season[3]	Primary Habitat[4]	Observed[5]	Comments
Reptiles and Amphibians						
California tiger salamander	*Ambystoma californiense*	E/SC	Resident	Known from specific localities near Fremont. Vernal pools and slow moving streams.	U	Known localities are remote from project site, and no wetlands on site make habitat generally unsuitable.
California red-legged frog	*Rana aurora draytonii*	T/SC	Resident	Sloughs, slow moving water	U	Likely to occur in riparian corridor of Coyote Creek, 1,000 feet east of site, but lack of wetlands on site make it unlikely to be occupied during most of year.
Western Pond Turtle	*Clemmys marmorata*	—/SC	Resident	Sloughs, slow moving water	U	Restricted to Coyote Creek 1,000 feet from site. Unlikely to use project site.
Birds						
California Clapper Rail	*Rallus longirostris obsoletus*	E/E	Summer	Requires dense cattails, rushes or marshy vegetation for cover and nesting	U	No marsh vegetation on or adjacent to project site.
Western Snowy Plover	*Charadrius alexandrinus nivosus*	T/—	Summer	Nests in fine light sand in beaches and coastal strand.	U	No suitable habitat on or adjacent to site.
Burrowing Owl	*Athene cunicularia*	SC/SC	Summer	Short grass prairie	S	Species has been observed in vicinity of project site.
Northern Harrier	*Circus cyanus*	SC/FP	Summer	Forages and nests in annual grassland	S	Species observed foraging over project site and could potentially nest on site.
White-tailed kite	*Elanus leucurus*	SC/FP	Summer	Forages in annual grassland, nests in willows, oaks or other medium size trees	S	Species observed foraging in vicinity of project site.
Saltmarsh common yellowthroat	*Geothlypis trichas sinuosa*	—/SC	Summer	Nests in tall grasses and riparian shrubs. Limited to wetland areas	U	May rarely forage on project site, but tends to remain very close to wetland and riparian habitat that does not exist on project site.

TABLE 8.2-1
Special-Status Species Potentially Occurring on LECEF-Project Site

Common Name	Scientific Name[1]	Status[2] (Fed/CA)	Season[3]	Primary Habitat[4]	Observed[5]	Comments
Tri-colored blackbird	*Agelaius tricolor*	—/SC	Summer	Nests in large colonies in riparian settings, dense willow, cattail or blackberry.	U	Site lacks riparian vegetation necessary to support nesting habitat.
Mammals						
Pallid Bat	*Antrozous pallidus pacificus*	SC/SC	Resident	Oak Woodland	S	Species may forage in project area, but suitable roost sites are lacking.
Townsend's big-eared bat	*Plecotus townsendii*	SC/SC	Resident	Oak Woodland	S	Species may forage in project area, but suitable roost sites are lacking.
Salt-Marsh Wandering Shrew	*Sorex vagrans halicoetes*	—/SC	Resident	Restricted to salt marshes adjacent to bay.	U	No suitable habitat on site.
Salt Marsh Harvest Mouse	*Reithrodontomys raviventris*	E/E	Resident	Species favors dense pickleweed close to shore of Bay. Unlikely to move into drier upland habitats.	U	Nearest known locality is north end of sewage treatment plants. No marsh habitat on site.

[1] Scientific nomenclature follows AOU 1983, Jennings 1983, Zeiner *et al.* 1990.
[2] Status = Status of species relative to the Federal and California State Endangered Species Acts and Fish and Game Code.
[3] Season = Blooming period for plants. Season of use for animals. RES = Resident; SUMR = Summer; WNTR = Winter.
[4] Primary
[5] Present on site:

Fed	Federal Status.
E	Federally listed as endangered.
T	Federally listed as threatened.
PE	Proposed endangered.
PT	Proposed threatened.
C	Candidate for listing as federal threatened or endangered threatened. Proposed rules have not yet been issued because they have been precluded at present by other listing activity.
SC	Species of Special Concern threatened. Proposed rules have not yet been issued because they have been precluded at present by other listing activity.
CA	California status.
E	Species whose continued existence in California is jeopardized.
T	Species that although not presently threatened in California with extinction, is likely to become endangered in the foreseeable future.
SC	California Department of Fish and Game "Species of Special Concern". Species with declining populations in California.
FP	Fully protected against take pursuant to the Fish and Game Code Section 3503.5.
—	No California or federal status.
CNPS	California Native Plant Society Listing (does not apply to wildlife species).
IB	Plants, rare, threatened or endangered in California and elsewhere and are rare throughout their range. According to CNPS, all of the plants constituting List 1B meet the definitions of Sec. 1901.
Habitat	Most likely habitat association.

TABLE 8.2-1
Special-Status Species Potentially Occurring on LECEF-Project Site

Common Name	Scientific Name[1]	Status[2] (Fed/CA)	Season[3]	Primary Habitat[4]	Observed[5]	Comments

O Observed onsite.
R Recorded onsite.
S Suitable habitat onsite.
U Unsuitable habitat onsite.

Chapter 10 (Native Plant Protection) of the California Department of Fish and Game Code and are eligible for state listing.

SOURCE: California Dept. of Fish and Game, *California Natural Diversity Database*, 2001; California Native Plant Society, *Inventory of Rare and Endangered Vascular Plants Of California*, Feb. 1994.

Special-Status Plant Species

The special-status plant species that occur in regional habitats similar to those found in the project area are described below.

Congdon's Tarplant (Hemizonia parryi ssp. congdonii)

This species occurs in valley and foothill grasslands, which are now dominated by introduced annual species. They tend to occur on unusual outcrops within grasslands, such as serpentinite or alkaline areas. A population of Congdon's tarplant was found in the summer of 1998 on property situated directly adjacent to the San Jose-Santa Clara Water Pollution Plant facility and there were historic records in the same area. Habitat on the project site is potentially suitable. A protocol-level survey of the DEIR project site for Congdon's tarplant was conducted on July 24, 2000. Congdon's tarplant was not observed on the LECEF project site during the survey.

Special-Status Animal Species

Expanded descriptions are included below only for those species for which potentially suitable habitat occurs on the DEIR project site, for which specific surveys were conducted, or for which the resources agencies have expressed particular concern.

Burrowing Owl (Athene cunicularia)

Federal Listing Status: Species of Concern; State Listing Status: Species of Concern. Burrowing Owls are terrestrial birds typically found in open, dry annual or perennial grasslands, deserts, and scrublands. They prefer habitats with low-growing vegetation, and/or slightly elevated areas of bare ground so as to detect predators and nest in burrows which are excavated by burrowing mammals. Burrowing Owls are found throughout area surrounding the DEIR project site. Protocol-level surveys were conducted on the mornings of June 14, 20, and 27, 2000. No sign of their presence was found, nor were any owls seen during the surveys.

Northern Harrier (Circus cyaneus)

Federal Listing Status: None; State Listing Status: Species of Concern. They are ground nesters, building nests in areas where the ground vegetation is sufficient to allow cover. This species was observed foraging on the DEIR site during the reconnaissance survey.

White-tailed Kite (Elanus Leucurus)

Federal listing status: None; State Listing Status: Protected. The White-tailed Kite is found in brushy grasslands and agricultural areas with low ground cover, as well as grassy foothills, marsh, riparian, woodland, and savanna. They require tall oaks, willows, or other broad-leaved deciduous trees for nesting. Kites have nested along Coyote Creek and are could nest in areas as near as 1,000 feet from LECEF project site.

Tri-colored blackbird (Agelaius tricolor).

Federal Listing Status: None; State Listing Status: Species of Special Concern. Tri-colored blackbirds migrate into the Central Valley in summer and nest in flocks of 1,000 to 3,000. Slightly larger than red-winged blackbirds, they require willow, blackberry or cattail thickets for nesting and forage widely over farm fields, grasslands and open shrub land. They are highly variable from year to year and may not be present in a particular area for 2 or 3 years and suddenly reappear. Tri-colored blackbirds may occasionally forage on the project site, but there is no suitable nesting habitat on site and no records on nesting onsite.

Pallid Bat (Antrozous pallidus pacificus).

Federal Listing Status: None; State Listing Status: Species of Special Concern. Colonies of this species generally roost in rocky outcroppings, in buildings, under bridges, and in hollow trees. Pallid bats forage on terrestrial arthropods, and frequent dry open grasslands near water. Pallid bats could forage in the project site. Most of the buildings on the project site are greenhouses, which do not provide the moderate temperatures and low light conditions that are favorable for bat roosts. It is unlikely that bats are roosting in existing onsite structures.

Townsend's Big-eared Bat (Plecotus townsendii)

Federal Listing Status: None; State Listing Status: Species of Special Concern. The Townsend's big-eared bat was once common in California, but now is considered uncommon to rare. This species frequents rural buildings, woodlands, or xeric environments, but are extremely sensitive to human disturbance. This species may forage over the site. Most of the buildings on the project site are greenhouses, which do not provide the moderate temperatures and low light conditions that are favorable for bat roosts. It is unlikely that bats are roosting in existing onsite structures.

Bay checkerspot butterfly (Occidryas editha bayensis)

(formerly Euphydryas) is a federal listed threatened species and is found from Twin Peaks, San Francisco, south to northern Santa Clara County. The distribution of the Bay checkerspot varies through time. Consequently, the Bay checkerspot butterfly potentially occupies any site with favorable habitat existing within its historic range. Impacts to the Bay checkerspot butterfly populations result from loss of habitat and food plants. Fertilization of serpentine grasslands (including nitrogen from air pollution) threatens Bay checkerspot butterfly populations.

Suitable habitat for the Bay checkerspot butterfly exists on Coyote Ridge, approximately 12 miles southeast of the project site. Although remote, air quality modeling indicates that nitrogen compounds from the facility would potentially deposit in the Coyote Ridge area, and could potentially contribute to the cumulative degradation of serpentine habitat there.

8.2.1.4 Significant and Heritage Trees

A tree survey was completed in May 2000 by Bio Tech Services for the DEIR project site (Appendix 8.2C). A group of four red willows were identified as significant trees on the northern boundary of the proposed LECEF project site, as well as one red willow tree on the southern boundary of the LECEF site. As these trees are either just outside or just inside of the LECEF site, the trees will likely remain undisturbed.

On the southwest portion of the 55-acre parcel purchased by c*Power, one red willow, one box elder, one plum, and two cottonwoods were identified as significant trees. These five significant trees are located near the proposed access roads.

Trees potentially affected by the project in the development area are shown in Figure 8.2-1.

Heritage Trees

Santa Clara County maintains a directory of Heritage Trees based on parcel numbers. The County reported the LECEF site does not have any listed Heritage Trees.

8.2.1.5 Biological Resources of Commercial and Recreational Value

There are no significant biological resources of commercial or recreational value on the project site. Species along the Coyote Creek riparian corridor are of recreational value to the occasional observer and would not be affected by the project.

Linear Features

Proposed Electric Transmission Line Connection

The LECEF power lines will be connected to PG&E's planned Los Esteros substation, which will abut the north end of the proposed site. Therefore, construction of the transmission line would affect the same area and resources as described above for the project site.

There are two temporary alternatives in case the substation is not constructed in a timely manner. The preferable alternative, with PG&E advancing the construction of the inter-tie between the Los Esteros Substation to the inter-tie into the existing Nortech-Trimble 115 kV line located near the intersection of Zanker Road and SR 237, would not result in substantial changes to electric transmission line.

The less preferable alternative would be c*Power building a temporary wood pole line to the intersection of Zanker Road and SR 237, for a distance of approximately 2,000 feet. This temporary linear facility would be co-located in the same general area as the proposed primary access road and wastewater discharge line and would affect the same area and resources as described below for those linear features.

Proposed Natural Gas Pipeline Corridor

Natural gas for the facility will be delivered via a new gas line, connected to two existing PG&E main pipelines at the southwest corner of the applicant's property and will run north about 550 feet to the LECEF site.

Vegetation Communities

Vegetation communities in the natural gas pipeline route include non-native annual grassland, non-native weedy species and agricultural crops similar to those described for the project site.

Wildlife

Wildlife that potentially occur along the natural gas pipeline route include species that inhabit or forage in urban or ruderal habitats, such as house mice, roof rats, fox squirrels, deer mice, and feral cats. Bird species include the European starling, American robin, mourning dove, and the northern mockingbird.

Special-Status Species

No special-status species were observed along the natural gas pipeline route during the site visit on June 13, 2001.

Recycled Water Supply and Return Corridor

Connection to the SBWR existing recycled water pipeline would require the construction of a 1,000-foot pipeline. The pipeline is routed south of the LECEF, trenching along an existing right-of-way, and turns west to connect to the existing SBWR pipeline parallel to State Highway 237 located on WPCP Buffer land.

Wastewater will be discharged to the SJ/SC WPCP via a new 2,700 foot sanitary sewer pipeline. The proposed connection point is to the existing sewer in Zanker Road. The proposed route is within the right-of-way of the proposed primary access road.

Vegetation Communities

The area proposed for construction of the recycled water line runs along the western boundary of the LECEF site, across lands dominated by agricultural uses; primarily hay and pasture crops.

Wildlife.

Wildlife use in the water line ROW is minimal. Songbirds may use the trees and landscape habitats as roost and/or nest sites.

Special-Status Species

No special-status species were observed along the recycled water route during site surveys on June 13, 2001.

8.2.2 Environmental Consequences

Potential impacts to biological resources were evaluated to determine permanent and temporary effects of project construction, operation, maintenance, and decommissioning of the LECEF project and supporting facilities.

A summary of potential impacts is presented in Table 8.2-2.

8.2.2.1 Standards of Significance

Impacts on biological resources are considered significant if one or more of the following conditions could result from implementation of the proposed project:

- Substantial effect, reduction in numbers, restricted range, or loss of habitat for a population of a state- or federally-listed threatened or endangered species;
- Substantial effect, reduction in numbers, restricted range, or loss of habitat for a population of special-status species, including fully-protected, candidate proposed for listing, species of special concern, and certain CNPS list designation;
- Substantial interference with the movement of any resident or migratory fish or wildlife species;
- Substantially diminish or reduce habitat for native fish, wildlife, or plants; or
- Substantial disturbance of wetlands, marshes, riparian woodlands, and other wildlife habitat.
- Remove trees designated as heritage or significant under County of local ordinances.

8.2.2.2 LECEF Project Site and Access Roads

Construction Impacts

Construction of the LECEF Project will result in the following permanent and temporary impacts to biological resources on the project site:

- Removal of existing old buildings and the loss of 15 acres of agricultural/ruderal habitat. This type of habitat is common and widespread throughout the region, and does not support significant state or federally-listed threatened or endangered species. Therefore, development of the project site will have a less-than-significant impact.
- Potential loss of one red willow and two cottonwoods, defined as significant trees under County and City codes. This impact would be mitigated to a level less-than-significant.
- Temporary disturbance of approximately 20 acres of ruderal habitat for the construction laydown area. This area would be restored, and therefore is considered a less-than-significant impact.
- Predators such as gopher snakes would also lose foraging habitat on the site. The LECEF project might reduce the ability of the site to support raptors such as white-tailed kites and northern harrier. Northern harrier and white-tailed kite occur in the project vicinity and may breed close to the site. These individuals would be potentially disturbed during the construction phase of the project. Neither of these species is considered threatened or endangered, and the loss of a small amount of foraging habitat would not cause a substantial reduction in numbers of these species. Impacts would be considered less-than-significant.
- Stormwater discharged to Coyote Creek will cause temporary adverse impacts on water quality and potentially reduce the beneficial uses of Coyote Creek. Best Management Practices such as oil-water separators and implementation of a Stormwater Pollution Prevention Plan as described in Section 8.14 will reduce these impacts to less-than-significant.
- Construction in the vicinity of riparian habitat along Coyote Creek could adversely affect wildlife use and behavior. Resource agencies (e.g., CDFG and USFWS) and the City of San Jose require setbacks from riparian habitat of 100 feet to protect adjacent uses. The LECEF project site has a setback of more than 700 feet from Coyote Creek, which would reduce impacts to less-than-significant.

TABLE 8.2-2
Summary of Permanent and Temporary LECEF Project Impacts on Biological Resources During Construction

						Impacts	
Location	**Project Work**	**Construction Zone Size**	**Time Requirements**	**Habitat Type**	**Sensitive Biological Resources**	**Temporary**	**Permanent**
Power Plant Site	Grading for footprint construction	15 acres	Fall 2001 Winter 2001	Ruderal Developed/ landscaped	Significant trees		
Access road and wastewater return line	Grading and pavement for road	Approximately 5 acres, 2,700 feet long; 12''-15'' in diameter pipe in 4-foot by 4-foot trench	Fall 2001 Winter 2001	Small trees and agriculture land	Forage habitat for raptors, significant trees	Disturbance of 5 acres of disturbed grassland	Loss of 5 acres of agricultural field and potential loss of up to three. significant trees
Stormwater discharge	2-foot wide, 1-foot deep trench to existing outfall Coyote Creek flood control channel	Approximately 0.07 acres	Fall 2001 Winter 2001	Coyote Creek riparian corridor, near levee	Potential riparian species and habitat	Potential sedimentation into creek during construction	Potential adverse and positive water quality impacts
Construction laydown area	Construct compacted gravel pad	20 acres	Fall 2001 Winter 2001	Ruderal	Significant trees	Disturbance of 20 acres of agricultural land	
Natural gas pipeline	Gas pipeline trench	Approx. 550 feet of trench, 4-foot wide, 6- foot deep	Fall 2001 Winter 2001	Road, pasture, and annual grassland	Raptor forage, Significant trees	Disturbance of 1.5 acres of disturbed grassland	
Recycled water line	Pipeline trench	1,000-foot pipeline routed south of the LECEF; 4-foot wide, 4-foot deep trench	Fall 2001 Winter 2001	Road, pasture, and annual grassland	Significant trees	Disturbance of 2 acres of disturbed grassland (overlap of some area impacted by access road)	Potential loss of significant trees (same trees impacted by access road)

8.2.2.3 LECEF Project Operation Impacts

Operation of the proposed LECEF project may have the following potential impacts on biological resources on the power plant site and adjacent areas:

- Cooling tower drift effects on vegetation
- Noise from operation of the LECEF near a riparian corridor
- Stormwater runoff to Coyote Creek
- Nitrogen deposition near Coyote Ridge

Cooling Tower Drift

Cooling tower drift is the fine mist of water droplets that escape the cooling tower's mist eliminators and is emitted into the atmosphere. This section evaluates the affects of cooling tower drift on vegetation surrounding the LECEF project site. The LECEF project will require two cooling tower cells to disperse waste heat from the steam cycle.

Maximum cooling tower drift, the liquid water exhaust from the cooling tower, will be limited to 0.0005 percent of the circulating water flow. Cooling towers concentrate the particulates (total dissolved solids) during the cooling process and produces a salt mist. Salts can physically damage leaf cells of leaves, which affects the photosynthetic ability of the plant. Other effects include blocking the stomata (leaf pores) so that normal gas exchange is impaired, as well as affecting leaf adsorption and solar radiation reflectance. These effects can cause reduced productivity in crops, forest trees, and sensitive special-status plant species within a deposition area. Most of the literature evaluating impacts of salt deposition is based on impacts to crops and forest plants. Studies performed by Lerman and Darley (1975) concluded that particulate deposition rates of 365 g/m^2/year caused damage to fir trees, but rates of 274 g/m^2/year and 400 to 600 g/m^2/year did not cause damage to vegetation at other sites. Pahwa and Shipley (1979) exposed vegetation (corn, tobacco, and soybeans) to varying salt deposition rates to simulate drift from cooling towers that use saltwater (20 to 25 parts per thousand) in the circulation water. Salt stress symptoms on the most sensitive crop plants (soybeans) were barely perceptible at a deposition rate of 2.98 g/m^2/year (Pawha and Shipley 1979).

Cooling tower drift is not expected to have any impact on vegetation in surrounding habitats. Assuming a particulate deposition rate of 0.2 centimeters per second and a maximum salt deposition rate of 1.32 micrograms per cubic meter (the cooling tower particulate matter deposition rate), the expected deposition rate is 0.82 g/m^2/year, which is significantly less than levels expected to cause barely perceptible to the most sensitive crop plants.

Noise from Plant Operations

Operation of the plant would produce some noise that would potentially disturb sensitive wildlife using the riparian corridor of Coyote Creek (See Section 8.5). USD project buildings between the project site and Coyote Creek will reduce noise from the project to a predicted 50-55 decibels at the Creek. Wildlife using this segment of the corridor is currently subjected to higher noise levels from SR 237 and its interchanges with I-880 at Coyote Creek. Therefore, noise associated with the operation of the LECEF facility should not substantially impact wildlife already exposed to high noise levels.

Stormwater Discharge.

Development of the project site would increase the potential for storm water runoff to carry pollutants associated with electrical power plants into Coyote Creek and decrease the potential for storm water runoff to carry pollutants associated with past agricultural activities (see section 8.13). Street and parking lot runoff often carries grease, oil, and trace amounts of heavy metals into natural drainages. Runoff from landscaping can carry pesticides, herbicides, and fertilizers. Particulates generated by project traffic and construction that are deposited on paved surfaces and carried by runoff into natural waterways could increase sedimentation impacts to Coyote Creek and San Francisco Bay.

Runoff from the project site will be collected and discharged to an existing 24” diameter out-fall located on the Coyote Creek by-pass channel rather than directly into the channel of Coyote Creek. Runoff from the LECEF project site will be retained and then diverted via a pipeline to the Coyote Creek by-pass channel. To the extent that runoff from the site percolates into the ground in the by-pass channel and sediment settles out of runoff before reaching Coyote Creek, the impacts of the project on water quality would be reduced from what would normally be found in urban runoff discharged to a creek. Implementation of Best Management Practices such as erosion and sediment control would reduce impacts to less-than-significant (See Section 8.14).

Nitrogen Deposition

Atmospheric nitrogen produced from man-made facilities has become a concern in the south Bay, because nitrogen acts as a fertilizer for non-native grasses that out-compete native serpentine species. The Bay Area air basin has relatively high levels of atmospheric nitrogen in the form of oxides of nitrogen (NOx) which are produced mainly by fuel combustion in vehicle engines and industrial processes (Air Resources Board [ARB] 1986). Nitrogen oxides convert to particulate nitrogen (ammonium and nitrates) that deposits on the soils. When deposited, some of this nitrogen is available for absorption by plants. The fertilization of soils by this deposition process facilitates the rapid growth non-native grasses.

No direct loss of serpentine habitat will occur from the LECEF project; however, indirect impacts may occur from emissions of NOx from the HRSGs. The emissions are below levels that would produce direct adverse effects on the vegetation or soils in the area; however, the small amount of atmospheric nitrogen added to the already high levels currently in the Bay Area may contribute to increases in non-native grassland habitat, and consequent declines in habitat quality for endemic serpentine species.

- A conservative estimate of maximum deposition of 0.0431 kg/ha/yr on Coyote Ridge would represent a 0.1 percent increase in ambient nitrogen deposition from existing levels. This level of nitrogen deposition when considered in the context of existing sources of nitrogen (primarily vehicles) is practically theoretical. There would be no measurable affect from nitrogen originating at the proposed facility and therefore the impact is considered less-than-significant.

8.2.2.4 Proposed LECEF Project Linear Corridors

Natural Gas Pipeline

Construction Impacts

Construction of the 550 feet LECEF natural gas pipeline will result in temporary impacts to biological resources. Construction would remove vegetation on an area 3 to 4 feet wide and approximately 550 feet long. Most of this vegetation is annual grassland, and star thistle. Birds and mammals that forage on the border of the buffer property's eastern edge could temporarily be displaced during construction activities.

Operation Impacts

Operation of the gas pipeline would not cause impacts to biological resources unless a leak should occur. Leakage of the gas pipeline could result in a fire, which could impact both vegetation and animals.

Decommissioning Impacts

Decommissioning of the gas pipeline could involve digging the pipeline out of the ground. These activities would cause similar impacts as the construction impacts mentioned above. The gas pipeline could also be sealed and left in place, which will not cause impacts to biological resources.

Electric Transmission Line

Construction Impacts

No additional grading, blading, or other disturbance is necessary to complete the proposed transmission line construction. Impacts to habitat, wildlife and special status species are expected to be less-than-significant.

If the less preferable transmission line alternative is required, the construction, operation, and decommissioning of a temporary wood pole line to the intersection of the Zanker Road and Highway 237, a distance of approximately 2,000 feet, will not cause impacts to biological resources.

Recycled Water Supply and Return Lines

Construction Impacts

Excavation activities associated with installing the 1,000 foot water supply and 2,700 foot return lines could potentially cut through roots that could weaken some trees, making them susceptible to disease and shock. The number of trees affected would not be significant.

Operation Impacts

Operation of the recycled water line is not expected to impact biological resources.

Decommissioning Impacts

Decommissioning of the recycled water pipeline could involve digging the pipeline out of the ground. These activities would cause similar impacts as the construction impacts mentioned above. The water pipeline could be sealed and left in place, which will not cause impacts to biological resources.

8.2.3 Proposed Mitigation Measures

Mitigation measures to avoid, minimize, or compensate for impacts to biological resources, including special-status species, that may be affected by the LECEF project are based on mitigation for the Metcalf Energy Center (MEC), located near LECEF. Mitigation measures for the MEC project were developed through consultation developed with the USFWS, CDFG, NMFS, and the Santa Clara County and San Jose Planning Departments.

Mitigation measures developed for project impacts that avoid, or minimize impacts to less than significant are described below.

8.2.3.1 Project Construction

The following measures will be implemented in all LECEF project construction areas.

- Provide worker environmental awareness training for all construction personnel that identifies the sensitive biological resources and measures required minimizing project impacts during construction and operation
- Avoid sensitive habitats and species during construction by developing construction exclusion zones and silt fencing within 500 feet of sensitive areas
- Pesticides or herbicides will not be used in project areas
- Prepare construction monitoring and compliance reports that analyzes the effectiveness of the mitigation measures (See Appendix 8.2C for a draft of the biological monitoring and mitigation implementation plan).

8.2.3.2 Special Biological Resources

Specific mitigation / protective measures were developed to minimize project impacts for the sensitive habitats of the Coyote Creek riparian corridor, and for the loss of significant / heritage trees in Santa Clara County and San Jose. The following paragraphs describe additional mitigation / protective measures that will be implemented for these sensitive areas.

Coyote Creek Riparian Corridor

The following protective measures are proposed to avoid impacts to the potential habitats of biological resources in the Coyote Creek corridor.

1. Avoid Coyote Creek habitats.
2. Implement erosion control in the temporary impact areas, especially near wetlands and waterways.
3. Revegetate temporary disturbance areas with like species (i.e. grassland species in grassland areas).

Significant Trees

The following mitigation measures would reduce impacts to significant trees to less than significant.

1. Minimize the number of significant trees removed from the LECEF project site for construction and operation activities.
2. Construction vehicles, equipment, and materials will be restricted from the drip line of the remaining trees.

3. Provide replacement trees at a ratio of at least 3:1 (replace three trees for every tree removed) with tree species as agreed upon with City of San Jose.
4. Plant replacement trees as close to the original location as possible.
5. Design proposed linear facilities to avoid drip lines and removal of significant and heritage trees.
6. Have the mitigation and monitoring plan reviewed and authorized by the San Jose City arborist before construction activities begin.

8.2.4 Cumulative Impacts

A portion of the ruderal habitat on the LECEF project site would be removed to accommodate construction and operation of the facility. This would reduce the ability of the site to support raptors such as white-tailed- kites and northern harrier. Development of the LECEF project would contribute to a reduction in the overall variety of species found in the area. While the project would contribute to the loss of ruderal and disturbed habitat in the area, development of the LECEF project itself would not constitute a significant impact, as these are not considered sensitive habitats.

The loss of this habitat (ruderal) may contribute to the reduction in the overall carrying capacity of the area for a variety of common animals like California ground squirrels, western fence lizard, Botta’s pocket gopher, and others.

The project would contribute incrementally to the nitrogen fallout of the region, that cumulatively would affect sensitive serpentine habitats on Coyote Ridge. To determine whether this is cumulatively significant, one would need to compare the difference between a future with-and without-project scenario. By any quantification, the difference would be undetectable. The presence or absence of the project would not affect whether serpentine communities persist in the Bay Area. Therefore the impacts are not considered cumulatively significant.

8.2.5 LORS

The loss of any significant trees which is neither irreversibly diseased, dead, or dying nor is substantially damaged from natural causes on the LECEF project site require a removal permit from Santa Clara County and / or San Jose. The permit application(s) requires a complete description and health analysis of the trees to be removed and is subject to a 30-day public notice.

LORS, including conformance to the LORS, are shown in Table 8.2-3. These LORS were reviewed to determine if the proposed project could affect sensitive biological resources. Through project modifications and proposed mitigation measures, the LECEF project will conform to all applicable LORS for protection of biological resources.

TABLE 8.2-3
Laws, Ordinances, Regulations, and Standards for Biological Resources for the LECEF Project

LORS	Purpose	Regulating Agency and Contact	Permit or Approval	Project Conformity
Federal				
Endangered Species Act of 1973 and implementing regulations, Title 16 United States Code (USC) §1531 et seq. (16 USC 1531 et seq.), Title 50 Code of Federal Regulations (CFR) §17.1 et seq. (50 CFR 17.1 et seq.).	Designates and protects federally threatened and endangered plants and animals and their critical habitat.	USFWS and NMFS Ms. Ken Sanchez (916)979-2751 Steve Edmundson (707)575-6050	Issues, Biological Opinion, or Authorization with Conditions after review of project impacts.	Applicant will avoid take of any listed species. . See Section 8.2.2.3
Migratory Bird Treaty Act 16 USC §§703-711	Prohibits the non-permitted take of migratory birds.	USFWS and CDFG Ken Sanchez Carl Wilcox (707)944-5500	None	Applicant will avoid the riparian habitat where birds are likely to nest. See Section 8.2.2.3
State				
California Endangered Species Act of 1984, Fish and Game Code, §2050 through §2098.	Protects California's endangered and threatened species.	CDFG	Issues 2081 Authorization for incidental take if necessary.	Applicant will avoid habitats likely to support listed species. See Section 8.2.2.3
Fish and Game Code Fully Protected Species. §3511: Fully Protected birds §4700: Fully Protected mammals §5050: Fully Protected reptiles and amphibians §5515: Fully Protected fishes	Prohibits the taking of listed plants and animals that are Fully Protected in California.	CDFG	Reviews AFC to determine if there will be impacts to Ecological Reserves.	Applicant will avoid habitats likely to support protected species. See Section 8.2.3.2

TABLE 8.2-3
Laws, Ordinances, Regulations, and Standards for Biological Resources for the LECEF Project

LORS	Purpose	Regulating Agency and Contact	Permit or Approval	Project Conformity
Fish and Game Code §1930, Significant Natural Areas	Designates certain areas such as refuges, natural sloughs, riparian areas, and vernal pools as significant wildlife habitats. Listed in the CNDDB.	CDFG	Reviews AFC to determine if there will be impacts to Ecological Reserves.	No SNA's identified in project vicinity. See Section 8.2.2.3
Fish and Game Code §1580, Designated Ecological Reserves	The CDFG commission designates land and water areas as significant wildlife habitats to be preserved in natural condition for the general public to observe and study.	CDFG	Reviews AFC to determine if there will be impacts to Ecological Reserves.	No Ecological Reserves in project vicinity. See Section 8.2.2.3
Fish and Game Code §1600, Streambed Alteration Agreement	Reviews projects for impacts on waterways, including impacts to vegetation and wildlife from sediment, diversions, and other disturbances.	CDFG Mark Imsdahl (707)944-5512	Issues conditions of the Streambed Alteration Agreement that reduces and minimizes effects on vegetation and wildlife.	No construction within the bed and banks of Coyote Creek is anticipated. No permit will be required. See Section 8.2.2.3
Native Plant Protection Act of 1977, Fish and Game Code, §1900 et seq.	Designates state rare and endangered plants and provides specific protection measures for identified populations.	CDFG	Reviews mitigation options if there will be significant project effects on threatened or endangered plant species.	None
County				
Policies set forth in the County of Santa Clara General Plan	Encourages preservation and management of biotic resources, including habitats for special-status species and migratory species and significant or heritage trees. Puts planning constraints in sensitive habitat areas but does not supersede CDFG and USFWS requirements.	Santa Clara County Rachel Gibson Planning Department (408)299-4321	Reviews AFC and comments. Tree removal permit for loss of significant trees.	Applicant will obtain a tree removal permit if required. See section 8.2.3.2.

TABLE 8.2-3
Laws, Ordinances, Regulations, and Standards for Biological Resources for the LECEF Project

LORS	Purpose	Regulating Agency and Contact	Permit or Approval	Project Conformity
City				
The City of San Jose Tree Removal Controls (San Jose City Code, sections 13.31.010 to 13.32.100)	Protects native and non-native trees having a trunk measuring 56 inches or more in circumference (18 inches in diameter), 24 inches above the natural grade of slope.	City of San Jose Mark Beaudoin (408)277-4373	Tree removal permit required to remove significant trees on the LECEF site.	Applicant will obtain a tree removal permit if required. See section 8.2.3.2.
Policies set forth in the San Jose General Plan and Riparian Corridor Policies	Encourages preservation of habitats and places planning constraints in sensitive habitat areas.	City of San Jose Mark Beaudoin (408)277-4373	Reviews AFC for consistency with City Policy and comments.	Applicant considered City of San Jose General Plan and Policies, and designed the project to be consistent with them. See Section 8.2.2.3

8.2.6 Permits and Permitting Schedule

Permits applicable for protecting the biological resources are provided in Table 8.2-4. Items required to complete permit applications and the estimated date of application are also shown.

TABLE 8.2-4
Permits and Schedule

Permit/Authorization	What Required to Complete Consultations	Date Application Submitted
Santa Clara County Tree Removal	Tree survey completed. Application for Tree Removal pending.	60 days before construction
San Jose Tree Removal	Tree survey completed. Application for Tree Removal pending.	60 days before construction
Santa Clara County Approval of Construction Plans Near Coyote Creek	Submit construction plans and receive feedback	60 days before construction
CDFG Streambed Alteration Agreement for outfall to Coyote Creek[1]	Prepare application that clearly identifies areas of impact and measures to protect vegetation and wildlife downstream of construction.	90 days before construction
Water Quality Certification	Prepare application that describes monitoring plan for water quality of stormwater discharge, requires completed endangered species consultations and CDFG streambed alteration agreement.	10 days before construction.

8.2.7 References

ARB (Air Resources Board). 1986. *The Effects of Oxides of Nitrogen on California Air Quality*. By Technical Support Division State of California Air Resources Board. Report Number: TSD-85-01. March.

Botanical Research Group. 1991. *Rare Plant and Floristic Survey of the Santa Clara County Proposed Jail Site.* Prepared for CH2M HILL. June 22.

Calpine Corporation and CH2M HILL. 2000. *Application for Certification for Scott Substation Peaking Project.* October 2000.

CH2M HILL. 1991. *Baseline Study Report: Calero County Park Master Plan EIR*. Prepared for the Santa Clara County Parks and Recreation Department. September.

City of San Jose. 2000. *Draft Environmental Impact Report for the U.S. Dataport Planned Development Rezoning and Prezoning.* November 2000.

City of San Jose. 1999. Revised Riparian Corridor Policy Study. Prepared by The Habitat Restoration Group and Jones and Stokes Associates, Inc. Approved by City Council May 17.

[1] The expected use of an existing 24” diameter corrugated steel out-fall would negate the requirement of the CDFG Streambed Alteration Agreement.

California Energy Commission. 2000. *Metcalf Power Plant Project California Energy Commission Power Plant Siting Case Applicant's Information.* (http://www.energy.ca.gov/sitingcases/metcalf/calpine/index.html)

California Public Utilities Commission. 2000. *Pacific Gas and Electric Company's Application for Certificate of Public Convenience and Necessity for Northeast San Jose Transmission Reinforcement Project (Application No. 99-09-029) Draft Environmental Impact Report.* June 2000.

City of San Jose. 2001. Resolution No. 70259. A Resolution of the City of Council of San Jose Making Certain Findings Concerning Mitigation measures, Adopting a Mitigation Monitoring and Reporting Program, Making Findings Concerning overriding considerations in accordance with the California Environmental Quality Act for the US Dataport Project for which and Environmental Impact Report has been Prepared. April 3.

City of San Jose. 1994. *San Jose 2020 General Plan.*

City of San Jose. 1998. *Alviso Master Plan.: A Specific Plan for the Alviso Community Final EIR*.

City of San Jose. 1998. *Alviso Master Plan.: A Specific Plan for the Alviso Community* (December 1998)

CNDDB (California Natural Diversity Data Base). 1999. Database and Quadrangle Overlays for Morgan Hill, Santa Teresa Hills, Lick Observatory, and San Jose East Quadrangles. April.

Santa Clara, County of. 1994. *Santa Clara County General Plan.*

Weiss, S. B. 1999. Cars, Cows, and Checkerspot Butterflies: Nitrogen Deposition and Management of Nutrient-Poor Grasslands for a Threatened Species. C*onservation Biology* 13: 1-12.

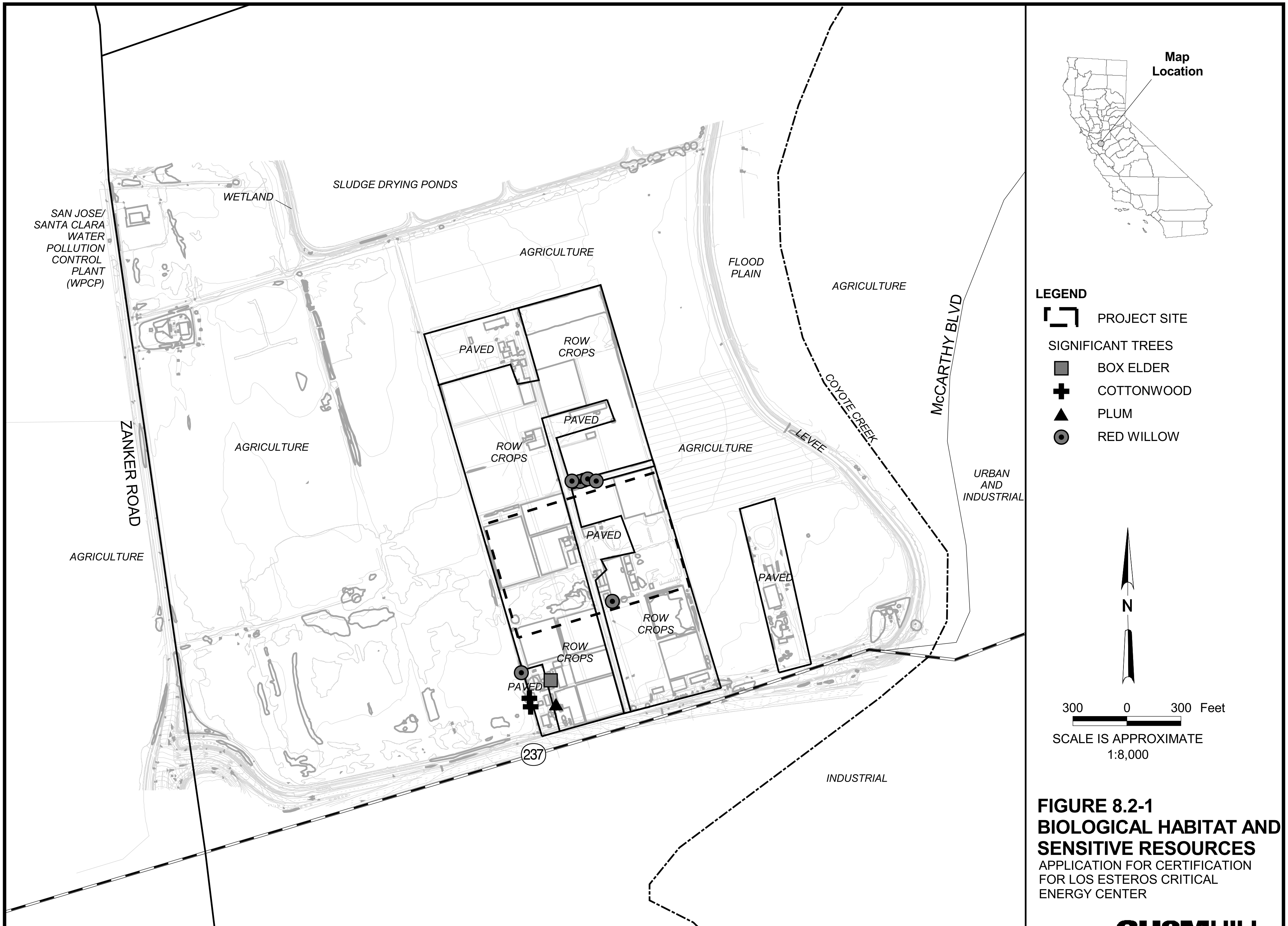
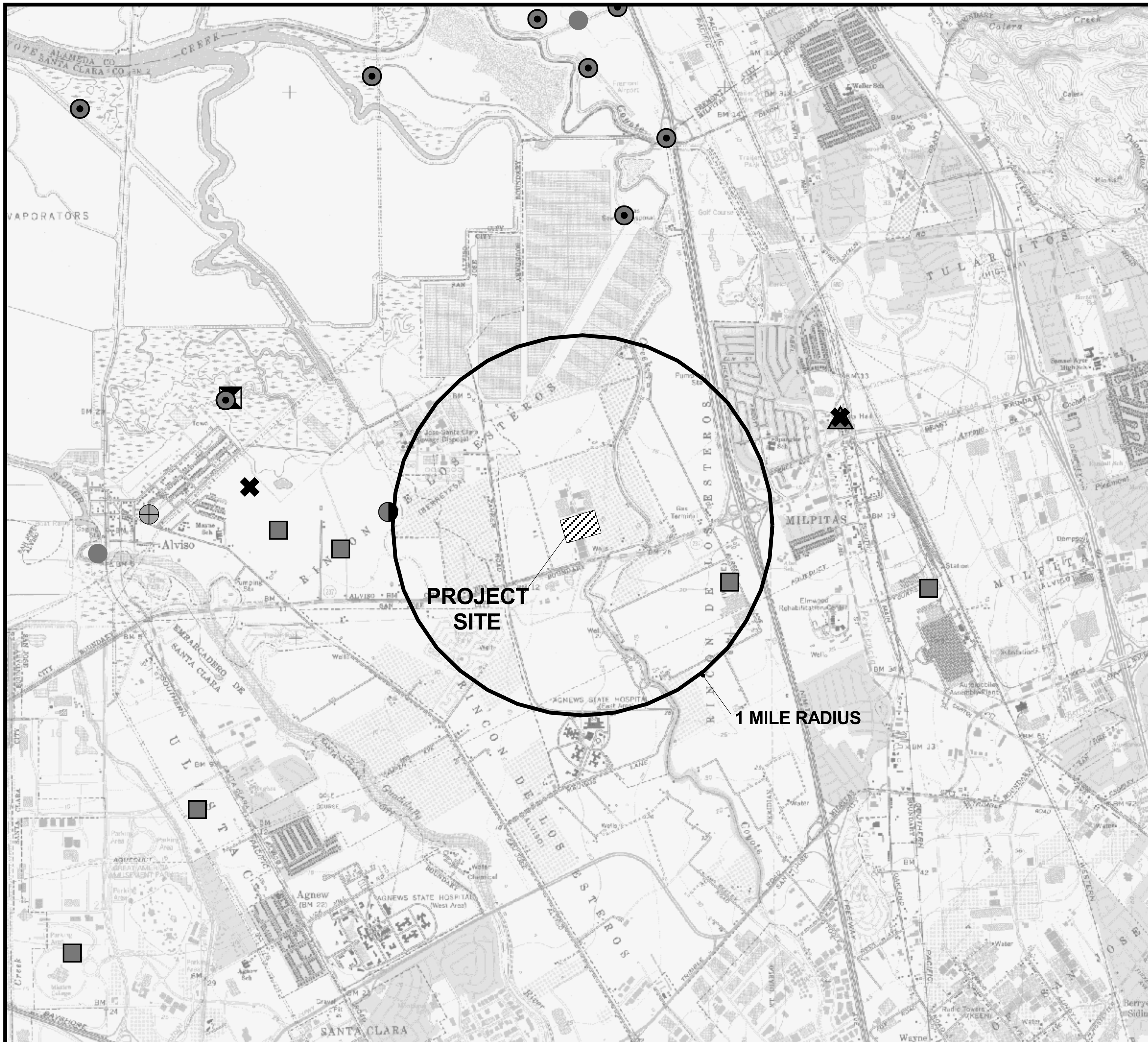


FIGURE 8.2-1
BIOLOGICAL HABITAT AND SENSITIVE RESOURCES
APPLICATION FOR CERTIFICATION FOR LOS ESTEROS CRITICAL ENERGY CENTER

CH2MHILL

CH2M Hill RDD ArcView Project File \\Thor\Cart1\rddgis\san_jose\sanjose.apr 10:54 p.m. 07-31-2001



Map Location

LEGEND

- PROJECT SITE
- ALKALI MILK-VETCH
- BURROWING OWL
- CONGDON'S TARPLANT
- POINT REYES BIRD'S-BEAK
- SALT-MARSH HARVEST MOUSE
- SALTMARSH COMMON YELLOWTHROAT
- WESTERN SNOWY PLOVER
- WHITE-TAILED KITE

SOURCE: CNDDB 2001

N

2000 0 2000 Feet

SCALE IS APPROXIMATE

FIGURE 8.2-2
SENSITIVE SPECIES LOCATIONS

APPLICATION FOR CERTIFICATION FOR LOS ESTEROS CRITICAL ENERGY FACILITY

CH2MHILL

CH2M Hill RDD ArcView Project File \\Thor\Cart1\rddgis\san_jose\sanjose.apr 10:38 p.m. 07-31-2001

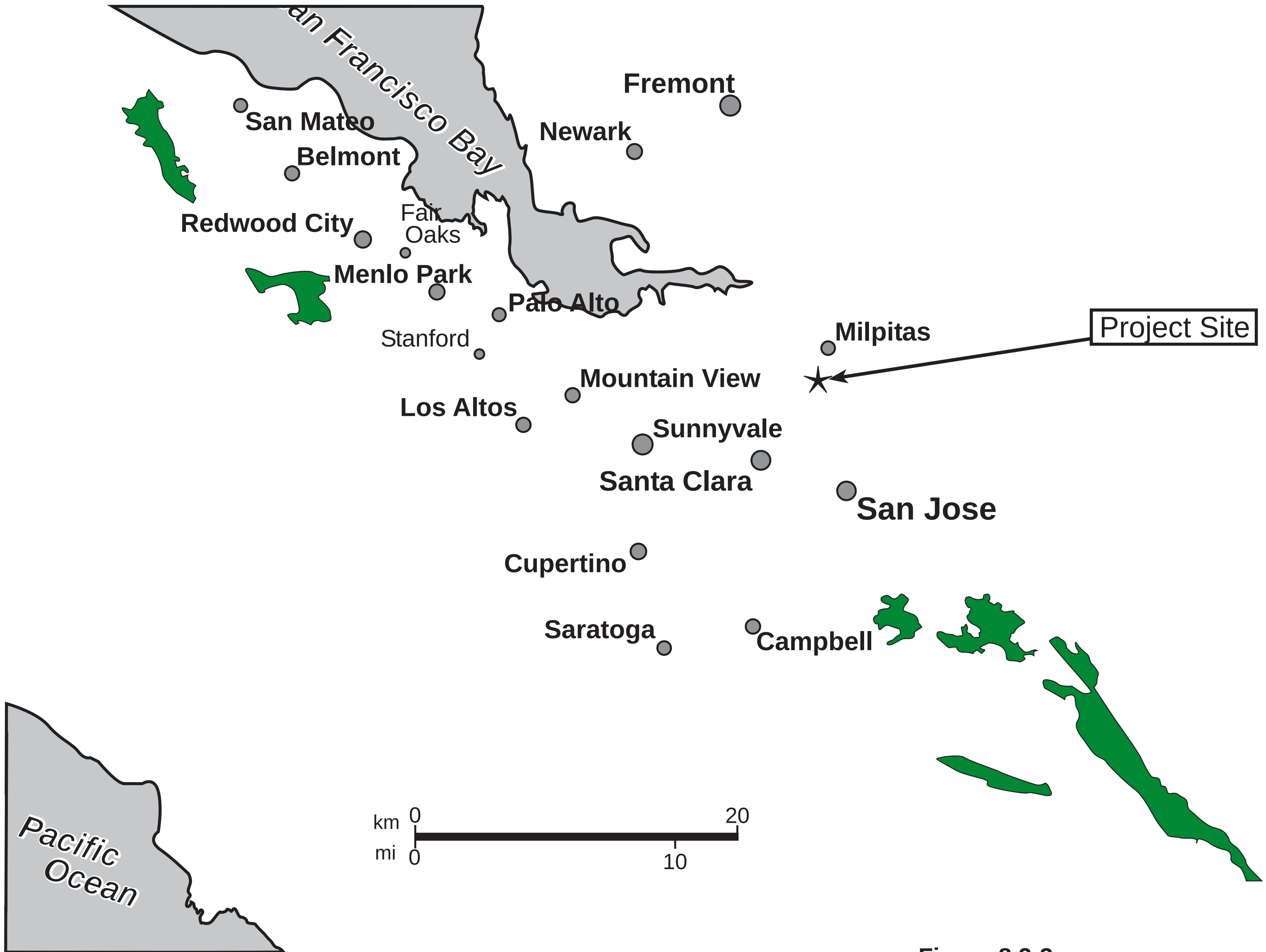


Figure 8.2-3
Location of Serpentine Habitat Relative to the Los Esteros Critical Energy Facility Project

CH2MHILL

E072001011SAC exhibit002_serpentine_site.fh9

8.3 Cultural Resources

This section determines whether cultural resources are present and could be affected adversely by the Los Esteros Critical Energy Facility (LECEF) project. The significance of any potentially affected resources is assessed and measures are proposed to mitigate potential adverse project effects. This study was conducted by Dr. James C. Bard and Mr. Jim Sharpe, M.S. (CH2M HILL Cultural Resource Specialists who meet the *Standards and Guidelines for Archaeology and Historic Preservation* (National Park Service, 1983)).

This section is consistent with both federal and state regulatory requirements for cultural resources pursuant to Sections 106 and 110 of the National Historic Preservation Act (NHPA) of 1966 (as amended) (16 U.S.C. Section 470f) and its implementing regulations 36 CFR Part 800 and the California Environmental Quality Act (CEQA). The study scope was developed in consultation with the CEC's cultural resources staff and complies with *Instructions to the California Energy Commission Staff for the Review of and Information Requirements for an Application for Certification* (CEC, 1992) and *Rules of Practice and Procedure & Power Plant Site Certification Regulations* (CEC, 1997).

Cultural resources include prehistoric and historic archaeological sites;[1] districts and objects; standing historic structures, buildings, districts and objects; and, locations of important historic events, or sites of traditional/cultural importance to various groups.[2]

Section 8.3.1 describes the cultural resources environment that might be affected by the LECEF. Section 8.3.2 discusses the environmental consequences of construction of the proposed development. Section 8.3.3 determines if any cumulative effects from the project, and Section 8.3.4 presents mitigation measures that will be implemented to avoid construction impacts.

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1. "Site" - "the location of a significant event, a prehistoric or historic occupation or activity, or a building or structure ... where the location itself possesses historic, cultural, or archeological value" (USNPS-IRD 1991:15).

2. The "federal" definitions of *cultural resource*, *historic property* or *historic resource*, *traditional use area*, *sacred resources* are reviewed below and are typically also applied to non-federal projects.

   A *cultural resource* may be defined as a phenomenon associated with prehistory, historical events or individuals or extant cultural systems. These include archaeological sites, districts and objects; standing historic structures, districts and objects; locations of important historic events; and, places, objects and living or non-living things that are important to the practice and continuity of traditional cultures. Cultural resources may involve *historic properties*, *traditional use area*s and *sacred resource areas*.

   Historic property or *historic resource* means any prehistoric district, site building, structure or object included in, or eligible for, inclusion in the National Register of Historic Places. The definition also includes artifacts, records and remains which are related to such a district, site, building, structure or object.

   Traditional use area refers to an area or landscape identified by a cultural group to be necessary for the perpetuation of the traditional culture. The concept can include areas for the collection of food and non-food resources, occupation sites and ceremonial and/or sacred areas.

   Sacred resources applies to traditional sites, places or objects that Native American tribes or groups, or their members, perceive as having religious significance.

Section 8.3.5 discusses the laws, ordinances, regulations, and standards (LORS) applicable to the protection of cultural resources. Section 8.3.6 lists the agencies involved and agency contacts and Section 8.3.7 discusses permits and the permitting schedule.

If possible, all recorded cultural resources will be avoided completely by the LECEF project. However, if avoidance is not possible through project redesign, the significance of the affected resources will be evaluated formally using appropriate federal and/or state and local cultural resource significance evaluation criteria and guidelines. If a resource is determined to be significant, a data recovery program or some other appropriate mitigative effort will be undertaken in consultation with the CEC.

The LECEF project is subject to CEC and CEQA permitting requirements. If the project becomes subject to federal agency involvement (permitting, licensing, etc.), additional authorities related to cultural resources may be triggered, including the National Environmental Policy Act and the Archaeological and Historic Preservation Act (AHPA) of 1974 (16 U.S.C. Section 469), among others. The AHPA includes requirements to coordinate with the Secretary of the Interior for notification, data recovery, protection and/or preservation when a federally licensed project may cause the irreparable loss or destruction of significant scientific, prehistoric, historic, or archaeological data. In 1983, the Secretary of the Interior established standards for gathering and treating data related to cultural resources in *Standards and Guidelines for Archaeology and Historic Preservation*.

8.3.1 Affected Environment

Cultural resources are traces of human occupation and activity. In Northern California, cultural resources extend back in time for at least 11,500 years. Written historical sources tell the story of the past 200 years. Archaeologists have reconstructed general trends of prehistory. A cultural resources field inventory of the project area located potentially significant cultural resources within the project's Area of Potential Effect (APE). Contact with the Native American Heritage Commission (NAHC) did not result in the identification of traditional cultural properties in the project area.

Previous cultural resource studies conducted within a 0.5-mile radius of the proposed LECEF were reviewed. A discussion of the cultural resources sites in conflict with, or in potential conflict with, project elements (plant site, transmission lines, etc.) are addressed in Section 8.3.5.2. The following elements are included in the LECEF (see Figure 8.3-1) and its APE:

- LECEF generation plant site
- Natural gas supply line
- Recycled water supply and discharge lines
- Electrical transmission line

8.3.1.1 Natural Environment

The LECEF project area is located on the flat bayshore floodplain at the southern end of San Francisco Bay, located between Coyote Creek and the Guadalupe River. With the exception of the artificial berm along the banks of Coyote Creek, elevations range from 10 feet along the western edge of the project area to about 15 feet above sea level along the eastern boundary. The channelized Coyote Creek flood control channel runs northward along the eastern border of the project area.

Between 11,000 and 8,000 years ago, melting continental glaciers produced a rise in sea levels which created San Francisco Bay. As floodplain was reclaimed, the flow in the lower reaches of Coyote Creek slowed and alluvial sediments were deposited before reaching the Bay. Once creek bed sediments built up higher than the surrounding floodplain, a new creek course would be established whenever it flooded. These flood episodes distributed sheet-deposits of alluvium over the floodplain, often burying archaeological deposits and ancient river channels.

Over time, prehistoric settlements were forced to relocate (sometimes yearly) in response to flooding and changes in the river course, and thus buried archaeological deposits can be expected throughout the adjacent floodplain of Coyote Creek. The potential to discover archaeological resources buried beneath surficial Coyote Creek floodplain deposits is very high.

In prehistoric times, the LECEF project area would have been a floodplain grassland, perhaps characterized by scattered oak, sycamore, and willow trees, especially along the Coyote Creek corridor. Cultivated portions of the project area along Coyote Creek are a light tan/brown silt containing small rounded and sub-rounded gravels, while the western portion exhibits a darker, more clayey silt soil covered with annual grassy weeds.

8.3.1.2 Prehistoric Background

The LECEF project area is situated in an archaeologically sensitive area with Coyote Creek and other seasonal water sources lying in close proximity. Watercourses were favored locations for prehistoric occupation in the Santa Clara Valley. From such spots, Native Americans could exploit a variety of ecological niches on the alluvial plain, the nearby foothills and the productive marshes of southern San Francisco Bay.

Archaeologists believe that the population of the prehistoric San Francisco Bay Area slowly increased from the Early to the Late Horizon time periods (see below). The population increase is thought to reflect more efficient resource procurement, increased ability to store food at village locations, and the development of increasing political complexity.

Prior to about 5000 to 7000 years ago, Native American occupation of the San Francisco Bay Area was intermittent and sparse. Evidence for early occupation along the bayshores was hidden by rising sea levels from about 15,000 to 7,000 years ago, or was buried under sediments caused by bay marshland infilling along estuary margins from about 7,000 years onward (Moratto, 1984). Early occupants concentrated on hunting and gathering various plant foods and collecting shellfish.

A three-part cultural chronological sequence, the Central California Taxonomic System (CCTS) was developed by archaeologists to explain local and regional cultural change in prehistoric central California from about 4,500 years ago to the time of European contact (Lillard et al., 1939. Beardsley 1948, 1954). In 1969, several researchers met at UC Davis worked out several substantive taxonomic problems that had developed with the CCTS. Table 8.3-1 summarizes David Fredrickson's (1994) cultural periods model and provides CCTS classification nomenclature (such as "Early Horizon," etc.).

Moratto (1984) suggests the Early Horizon dated to circa 4,500 to 3,500 / 3,000 years ago with the Middle Horizon dating to circa 3,500 to 1,500 years ago and the Late Horizon dating to circa 1,500 to 250 years ago. The Early Horizon is the most poorly known of the period with relatively few sites known or investigated. Early Horizon traits include hunting, fishing, use of milling stones to process plant foods, use of a throwing board and spear ("atlatl"), relative absence of culturally affected soils (midden) at occupation sites, and elaborate burials with numerous grave offerings.

Middle Horizon sites are more common and usually have deep stratified deposits that contain large quantities of ash, charcoal, fire-altered rocks, and fish, bird and mammal bones. Significant numbers of mortars and pestles signal a shift to plant foods from reliance on hunted animal foods. Middle Horizon peoples generally buried their dead in a fetal position and only small numbers of graves contain artifacts (and these are most often utilitarian). Increased violence is suggested by the number of burials with projectile points embedded in the bones or with other marks of violence.

The Late Horizon emerged from the Middle Horizon with continued use of many early traits and the introduction of several new traits. Late Horizon sites are the most common and are noted for their greasy soils (midden) mixed with bone and fire-altered rocks. The use of the bow-and-arrow, fetal-position burials, deliberately damaged ("killed") grave offerings and occasional cremation of the dead are the best known traits of this horizon.

Acorn and seed gathering dominated the subsistence pattern with short and long-distance trade carried out to secure various raw materials. Compared to earlier peoples, Late Horizon groups were short in stature with finer bone structure; evidence perhaps of the replacement of original Hokan speaking settlers by Penutian speaking groups by circa 1,500 years ago.

Another scheme proposed by Chartkoff and Chartkoff (1984) is also used by archaeologists; its features are summarized in Table 8.3-2.

8.3.1.3 Ethnographic Background

The project site is located within the territory of the Costanoan, who lived in the area when Spanish explorers / missionaries entered. The aboriginal inhabitants of the project area belonged to a group known as the "Costanoan," derived from the Spanish word *Costanos* ("coast people" or "coastal dwellers") who occupied the central California coast as far east as the Diablo Range (Kroeber, 1925:462).

TABLE 8.3-1
Hypothesized Characteristics of Cultural Periods in California

1800 A.D. Upper Emergent Period Phase 2, Late Horizon	Clam disk bead money economy appears. More and more goods moving farther and farther. Growth of local specializations relative to production and exchange. Interpenetration of south and central exchange systems.
1500 A.D. Lower Emergent Period Phase 1, Late Horizon	Bow and arrow introduced, replace atlatl and dart; south coast maritime adaptation flowers. Territorial boundaries well established. Evidence of distinctions in social status linked to wealth increasingly common. Regularized exchanges between groups continue with more material put into the network of exchanges.
1000 A.D. Upper Archaic Period	Growth of sociopolitical complexity; development of status distinctions based on wealth. Shell beads gain importance, possibly indicators of both exchange

TABLE 8.3-1
Hypothesized Characteristics of Cultural Periods in California

Middle Horizon Intermediate Cultures	and status. Emergence of group-oriented religious organizations ; possible origins of Kuksu religious system at end of period. Greater complexity of exchange systems; evidence of regular, sustained exchanges between groups ; territorial boundaries not firmly established.
500 B.C. Middle Archaic Period Middle Horizon Intermediate Cultures	Climate more benign during this interval. Mortars and pestles and inferred acorn economy introduced. Hunting important. Diversification of economy; sedentism begins to develop, accompanied by population growth and expansion. Technological and environmental factors provide dominant themes. Changes in exchange or in social relations appear to have little impact.
3000 B.C. Lower Archaic Period Early Horizon Early San Francisco Bay Early Milling Stone Cultures	Ancient lakes dry up as a result of climatic changes; milling stones found in abundance; plant food emphasis, little hunting. Most artifacts manufactured of local materials; exchange similar to previous period. Little emphasis on wealth. Social unit remains the extended family.
6000 B.C. Upper Paleo-Indian Period San Dieguito Western Clovis 8000 B.C.	First demonstrated entry and spread of humans into California; lakeside sites with a probable but not clearly demonstrated hunting emphasis. No evidence for a developed milling technology, although cultures with such technology may exist in state at this time depth. Exchange probably ad hoc on one-to-one basis. Social unit (the extended family) not heavily dependent on exchange; resources acquired by changing habitat.

TABLE 8.3-2
The Chartkoff and Chartkoff (1984) Model of Cultural Periods in California

Pre-Archaic Period - 11,500-9,000 B.C.

Pre-Archaic populations were small and their subsistence included big game hunting of now extinct mammoth and mastodon. Research indicates that the Pre-Archaic economies were based on a wide-ranging hunting and gathering strategy, dependent to a large extent on local lake-marsh or lacustrine habitats.

Early to Middle Archaic Period - 9,000-4,000 B.C.

During the Early and Middle Archaic periods, prehistoric cultures began putting less emphasis on large-game hunting. Subsistence economies probably diversified somewhat, and Archaic era people started using such ecological zones as the coast littoral more intensively than before. Advances in technology (milling stones) indicate that new food processing methods became important, enabling more efficient use of certain plant foods, including grains and plants with hard seeds.

Late Archaic Period - 4,000-2,000 B.C.

An important technological advance was the discovery of a tannin-removal process for the abundant and nutritious acorns. Prehistoric trade networks developed and diversified, bringing raw materials and finished goods from one region to another. Resource exploitation, as during the Early and Middle Archaic, was generally seasonal. Bands moved between established locations within a clearly defined/defended territory, scheduling resource harvests according to their availability. Clustering of food resources along the shores of large lakes or the banks of major fish-producing rivers allowed for larger seasonal population aggregates. Dispersed resources, such as large and small game, during the winter prompted small family groups to disperse across the landscape for more efficient food harvesting. The spear thrower (atlatl) may have been introduced or increased in importance, accounting for a change in projectile point styles from the Western Stemmed to the Pinto and Humboldt series. Seed grinding increased in importance.

Early and Middle Pacific Periods - 2,000 B.C.-A.D. 500

The Pacific Period is marked by the advent of acorn meal as the most important staple food. Increasing population densities made it desirable and necessary for Indian populations to produce more food from available land and to seek more dependable food supplies. The increasing use of seed grinding and acorn leaching

TABLE 8.3-2
The Chartkoff and Chartkoff (1984) Model of Cultural Periods in California

allowed for the exploitation of more dependable food resources; increased use of previously neglected ecological zones (the middle and high Sierran elevations) may also have been part of this trend.

Late Pacific Period – A.D. 500-1400

Around A.D. 500 – 600, a cultural watershed was triggered by the introduction of the bow and arrow, which replaced the spear thrower and dart as the hunting tool/weapon of choice. The most useful time markers for this period tend to be small projectile points/arrow tips. Another trend is the marked shift from portable manos/metates to bedrock mortars/pestles (Moratto, 1984). Moratto, et al. (1978) demonstrated that this was a time of cultural stress, during which trading activity abated, warfare was common, and populations shifted away from the Sierra Nevada foothills to higher mountain elevations. They explain these changes in terms of rapid climatic fluctuations, including a drier climate and a corresponding shift of vegetation zones.

Final Pacific Period - A.D. 1400-1789

Populations became increasingly sedentary and depended more on staple foods, even as the diversity of foods exploited increased. Permanent settlements with high populations were more common. Every available ecological niche was exploited, at least on a seasonal basis. Other trends included the resurgence of long-distance trade networks and the development of more complex social and political systems.

Costanoan belongs to the larger Penutian language family also spoken by other California Indian groups (Shipley, 1978; Broadbent, 1972:55). Costanoan is subdivided into eight mutually unintelligible languages, as different from one another as modern-day Spanish is from French (Levy, 1978:485); however Kroeber (1925:463-465) divided Costanoan territory into seven dialect areas based on linguistic evidence in Spanish mission records and other sources. Linguistic evidence suggests that the Costanoans moved into the Bay Area around A.D. 500 and replaced an earlier Hokan-speaking population. Further details of Costanoan linguistic relationships can be found in Levy (1976).

The project area lies within the Tamyen territory of the Costanoan (*Ulistak* tribelet), close to the boundary with the Chochenyo Costanoan (also known as the ***Ohlone***; Galvan, 1967/68; Margolin, 1978). Based on Spanish mission records and archaeological data, researchers estimated the Tamyen to be about 1000 to 1200 individuals in 1770 (Levy, 1978:485; C. King, 1977:54). Within the Tamyen area, the population was further subdivided into tribelets. In 1770, these tribelets were politically autonomous groups containing some 50 to 500 individuals, with an average population of 200. Tribelet territories, defined by physiographic features, usually had one or more permanent villages surrounded by a number of temporary camps. The camps were used to exploit seasonally available floral and faunal resources (Levy, 1978:485;487).

The Costanoan aboriginal lifeway apparently disappeared by 1810 due to its disruption by new diseases, a declining birth rate, and the impact of the mission system. The Costanoan were transformed from hunters and gatherers into agricultural laborers who lived at the missions and worked with former neighboring groups such as the Esselen, Yokuts, and Miwok (Levy, 1978:486). Later, because of the secularization of the Missions by Mexico in 1834, most of the aboriginal population gradually moved to ranchos to work as manual laborers (Levy, 1978:486). For a comprehensive review of the Costanoan see Kroeber (1925), Levy (1978), T. King (1973), C. King (1974, 1977, 1978b), King and Hickman (1973), Elsasser (1986), Bean (1994), and Milliken (1995). For an extensive review of regional and Santa Clara

Valley prehistory see C. King (1974, 1977, 1978a-b), Elsasser (1978, 1986), T. King (1973), King and Hickman (1973), and Daniel, et al. (1983).

8.3.1.4 Historical Background

Recorded history in Santa Clara County can be divided into three periods: the Spanish Period (1769-1821), the Mexican Period (1821-1848), and the American Period (1848-present).

8.3.1.4.1 Spanish Period

The period of initial historic exploration of the Santa Clara Valley lasted from 1769 to 1776. Between 1769 and 1776 a number of Spanish expeditions traversed the area including those led by Portola, Fages, Fages and Crespi, Anza, Rivera, and Moraga (Levy, 1978:486). Even though the routes of the early explorers cannot be accurately determined, a number appear to have been within the project vicinity. These include the expeditions of Pedro Fages in 1770, Pedro Fages and Father Crespi in 1772, Fernando Javier y Moncada Rivera and Father Francisco Palou in 1774, Bruno de Hezeta-Palou in 1775, and Anza and Font in 1776. Still later, more Spanish expeditions passed near the approximate vicinity including those led by Alferez Gabriel Moraga in 1806, and Jose Viader accompanied by Moraga in 1810, and Jose Dolores Pico in 1815 (Beck and Haase, 1974:17, 20, 21).

Mission Santa Clara de Asis, the eighth of the 21 missions founded in California, was established on January 18th, 1777 (Hall, 1871:48; Hart, 1978:388). As one of seven missions within Costanoan territory, Mission Santa Clara would have been the mission with the greatest impact on the aboriginal population living in the vicinity (Hart, 1978:96). Moreover, Mission Santa Clara provided all the religious needs of the Pueblo San Jose de Guadalupe until 1851 (Hall, 1871:84). The Spanish philosophy of government was directed at the founding of presidios, missions, and secular towns with the land held by the Crown (1769-1821), while the later Mexican policy stressed individual ownership of the land (Findlay, 1980:6). The study area was probably used for grazing cattle as the export of tallow and hides was a major economic pursuit of the Santa Clara Valley and California during the Spanish Period.

8.3.1.4.2 Mexican Period

During the Mexican Period (1821 to 1846) and into the American Period, the project area was situated in the northern portion of Ranch Rincon de los Esteros (which was granted in 1838 to Ignacio Alviso (Blount, et al. 1980)). Rancho Rincon de los Esteros once embraced about 7000 acres and spread east from the Guadalupe River to the western outskirts of Milpitas. It was bordered on the south by pueblo lands, and on the north by the Bay (Arbuckle, 1968:27; Thompson and West, 1876: Map Number II, pp. 24-25). No Spanish Period adobe dwellings or other structures have been reported in or adjacent to the project area (Hendry and Bowman, 1940).

The Mexican Period witnessed the secularization of the missions as the Spanish-colonial system collapsed and the lands fell out of mission control. By 1845, most of the land holdings were in the form of large ranchos. Increasingly bad relations between the United States and Mexico led to the Mexican-American War of 1847, which resulted in Mexico releasing California to the United States under the Treaty of Guadalupe Hidalgo in 1848.

8.3.1.4.3 American Period

In the mid-19th century, much of the rancho and pueblo lands and some ungranted land in was sub-divided as the result of population growth, the American takeover, and the confirmation of property titles. Growth was attributed to the Gold Rush (1848), the completion of the transcontinental railroad (1869), and construction of local railroads. Later, the development of the refrigerator railroad car (circa 1880s), which was used to transport local agricultural produce to distant markets, had a major impact on the Santa Clara Valley.

During the later American Period and into the Contemporary Period (circa 1876-1940s), fruit production became a major industry (Broek, 1932:76-83). Fruit production / processing held steady until after World War II. In recent decades this agrarian land-use pattern has been gradually displaced by residential housing, commercial centers, and the development of research and manufacturing facilities associated with the electronics industry leading to the designation of the general region as the "Silicon Valley."

The LECEF project area is located within the Alviso area of the City of San Jose. Land speculators founded the Port of Alviso in the late 1840s and the initial town site survey of Alviso was completed in December 1849. The Port of Alviso, one of the oldest ports on the West Coast, was created to replace the Embarcadero de Santa Clara, one-half mile to the south. At its peak, Alviso was the major commercial shipping depot in northern California.

William Boots was an early farmer-settler within the Berryessa tract. By 1876, Boots owned over 650 acres in the area, including the easternmost portion of the project site. His residence was located south of SR 237, although a reported former structure of this era was located on the site. Subsequently, portions of the site were used to raise fruit, initially pears, from the 1920s to 1988.

The site also includes greenhouses used for vegetable and flower production and three residences built prior to 1950. Flower growing has been an important agricultural activity in Santa Clara County. Since the California constitution of 1879 prohibited almost all forms of employment to the Chinese population of the state, Chinese families were forced to be self employed in small firms or on farms. In the early years of the Chinese flower growing industry in Santa Clara County, all growers were from the Chung San area of China. The growers formed an association which sponsored social events and activities. The current greenhouse and nursery located on the project site were established in the late 1970s when a group of Chinese and Chinese-American flower growers relocated from the Cupertino area.

8.3.1.5 Resources Inventory

Much of the LECEF project area has been subject to previous investigation by Holman and Associates for the U.S. Dataport Planned Development Zoning (for the City of San Jose) (see Wiberg, 2000; Holman, 2000) Environmental Impact Report. A few areas not subject to Holman and Associates' investigation were field surveyed by CH2M HILL on June 22, 2001 (which resulted in negative findings – no cultural resources identified) (see Confidential Figure 8.3-2 for an illustration of the areas surveyed by Holman and Associates and by CH2M HILL). Although Holman and Associates' investigation covered most of the LECEF project area, an update search of the cultural resource records on file at the California Historical Resources Information System office at Sonoma State University (Northwest Information Center) was conducted; and an update request to the NAHC was generated by correspondence with the NAHC. The NAHC provided a list of Most Likely Descendants (MLDs) to CH2M HILL on July 12, 2001. CH2M HILL wrote letters to all listed MLDs on July 13, 2001.

8.3.1.5.1 Archival Research

CH2M HILL, "tiering" off the DEIS for the U.S. Dataport planned Development (see Wiberg, 2000), included in its archival research a review of the Wiberg (2000) document and other documents obtained previously from a series of record searches conducted at the Northwest Information Center of the California Historical Resources Information System at Sonoma State University in Rohnert Park as well as the update search conducted by Sonoma State for this project. Relevant excerpts from Wiberg (2000) are included here to document the previous studies conducted in the LECEF area.

> A search of relevant records, maps, and other archives was conducted for the U.S. DPDA at the Northwest Information Center (NWIC) of the California Historical Information System (HRIS) at Sonoma State University. This search included a detailed review of all cultural resource studies and recorded sites within ½ mile of the Project Area, as well as review of other selected sites and studies along the Coyote Creek and Guadalupe River corridors. The review revealed that portions of the Project Area had been surveyed for cultural resources, but that no cultural resources had been previously recorded on the U.S. DPDA (Bard, 1983; Garaventa, et al. 1984, 1993, 1994; Banet and Yelding-Sloan 1992).
>
> APN 15-31-63 was archaeologically surveyed in 1983 as part of an evaluation of the North Zanker development parcel (Bard 1983). This work resulted in the discovery of prehistoric site CA-SCL-528, a small "midden" site 150 m east of Zanker Road and 250-300 m north of the U.S. DPDA boundary in APN 15-31-63. Subsurface mechanical testing was subsequently undertaken to determine the areal extent of the deposit (Holman and Wiberg 1983). This work defined a low density midden measuring approximately 140 x 100 m and extending to a depth of at least 100 cm. During testing an intact Native American burial was encountered, indicating that the site was probably a habitation associated with a cemetery structure.
>
> Of interest, the South Bay Water Recycling Transmission Pump Station (located at 4160 Zanker Road) was subsequently constructed just north of SCL-528. It is not known whether construction of this plant adversely impacted this prehistoric site, since there is no record of any archaeological research undertaken in conjunction with the project on file at the HRIS. APN 15-31-63 was re-surveyed in 1992 for a proposed AM Radio Towers Relocation Project (Banet and Yelding-Sloan 1992); again results were negative for cultural resources.
>
> In 1983, the eastern border of APN 15-31-54 was surveyed as part of the Coyote Creek Flood Control Project (Garaventa, et al. 1983, 1984). While no surface evidence of historic or prehistoric resources were identified within the Project Area, archival research conducted in conjunction with the reconnaissance revealed evidence of a structure in this parcel immediately

next to Coyote Creek. According to historic maps, the structure was located on land owned by William Boots, apparently built after 1876 but prior to 1899 (Thompson and West 1876:24; United States Geological survey 1899[1913]).

APN 15-31-2 was surveyed in 1984 as part of the planning process for the rezoning and annexation of the parcel, as required by the City of San Jose before reclassifying the parcel for industrial use (Garaventa, et al. 1984). Again, no evidence of prehistoric cultural resources were observed, though only about 25 percent of the property was visible; the parcel contained numerous greenhouses and other buildings of the "United Flower Growers." Archival information presented in the Garaventa, et al. study indicates that the small Craftsman bungalow-style house in the southwest corner of this parcel may be one of two structures depicted at this location on a 1943 map (United States, War Department 1943, in Garaventa, et al. 1984:11); no structures are present at this location in 1899 (United States Geological Survey 1899[1913]).

The archive search and previous experience in the vicinity indicate the floodplain between Guadalupe River and Coyote Creek is highly sensitive archaeologically. Numerous prehistoric sites are recorded within a couple of miles of the Project Area, many if not most of them not visible on the surface due to either historic alterations or alluvial filling. Site CA-SCL-675, recorded as a midden sites deeply buried under alluvial silts, is located along the west bank of Coyote Creek near Agnew State Hospital (West Annex) 0.8 mile south of the Project Area (Cartier 1989a). CA-SCL-677 is another light-density midden site identified subsurface during a well removal project, located only 0.4 mile from the Project Area immediately south of Highway 237 on both sides of Highway 880 (Cartier 1989b).

Two other prehistoric resources discovered buried beneath sheet-flood alluvium in the vicinity of the Project Area are CA-SCL-418 and CA-SCL-450, both located between 1.5 and 2 miles south of the Project Area on floodplain between the Guadalupe River and Coyote Creek. SCL-418, another midden, was initially discovered during utility trenching on the west side of North First Street (Cartier 1979) and later identified east of the road (between 80 and 180 cm below the surface) during subsurface testing on the Moitozo property (Wiberg 1997). In contrast to the other buried sites discussed above which are characterized by midden deposit, SCL-450 was recorded as a locus of isolated Native American burials, some of which were in non-midden soils (Basin Research Associates 1981a, b). While the above review of buried archaeological sites between the Guadalupe River and Coyote Creek is not exhaustive, the assessment is sufficient to demonstrate the need for taking the unique environmental/archaeological setting of the U.S. DPDA into consideration.

The update search (File No. 01-650) conducted by CHRIS Northwest Information Center (Sonoma State University) revealed the following:

Within or immediately adjacent to the project site is one recorded prehistoric archaeological site (CA-SCL-528) and 32 individual cultural resource investigation reports (Reports S-4143; -4583; -4892; -5903; -6072; -6122; -6410; -6538; -6786, -6822; -7548; -7995; -8122, -8258, -8545; -9235, -14,230; -14,609; -18,289, -18,455; -18,541; -19,063; -19,072; -19,134; -19,424; -21,169; -23,105; -21,390, -22,980, -23,080; -23,105; -23,382; and -23,400.

Within ½ mile of the project are recorded P-43-735 and CA-SCL-677 (P-43-624 is within the boundaries of CA-SCL-677 and information about the burial is included with the site record for CA-SCL-677) and 20 individual cultural resource investigation reports (Reports S-4230; -4242; -4441; -6015; -6389; -7397; -8617; -8977; -11,360; -11,361; -12,294; -12,468; -12,803; -18;406; -18,457; -18,523; -19,062; -19,132; -20,177; and -22,304.

The footprints of these known/recorded archaeological sites and previous cultural resource investigation projects is presented in Confidential Figure 8.3-3. The most significant finding of the updated CHRIS search is that the entire LECEF area has been surveyed by others – there is simply no piece of ground in the LECEF project area that has not been surveyed by Bard (1983), Holman and Wiberg (1983), Wiberg (2000), CH2M HILL (this report) or by a host of other investigators (see Confidential Figure 8.3-3). Indeed, this area is probably one of the most intensively surveyed, and resurveyed areas in northern California. The entire search package provided by CHRIS (File No. 01-650) to CH2M HILL is provided to the CEC as a Confidential Appendix. Confidential Figure 8.3-3 is the CHRIS-provided map of known/recorded archaeological and historic sites and previous investigation report footprints.

8.3.1.5.2 Field Survey

A complete general reconnaissance for archaeological resources (after King et al., 1973) was completed by Holman and Associates (Wiberg 2000:7). As reported by Wiberg (2000:7-8), the property was easily located by natural and manmade features, and the entire project site was inspected except those portions of APN 15-31-2 covered by abandoned greenhouses and other structures associated with the United Flower Growers complex, and portions of APN 15-31-54 covered by Cilker Orchards facilities and the residential complex in the southeast corner of this parcel. Surface visibility ranged from excellent to impossible. With the exception of the narrow strip of land containing Cilker Orchards structures and equipment, the cultivated fields in this parcel had been recently disked or plowed affording excellent visibility of the ground surface. In contrast, APN 15-31-63 was thickly covered with waist-high grasses and weeds which severely limited surface visibility, and as noted most of the ground surface in APN 15-31-2 could not be inspected due to standing structures.

Most of the project area was walked in 20-30 meter transects, except the western portion of the U.S. Dataport Planned Development Area (USDPDA) covered in thick weeds, which was surveyed in 40-50 meter transects. Recent disking made exposure of the mineral soil by trowel unnecessary, except in APN 15-31-63.

As reported by Wiberg (2000:8), two areas containing possible prehistoric resources were noted during the surface reconnaissance. Two small pieces of weathered oyster shell were observed in the northern portion of APN 15-31-54, next to Coyote Creek and just south of

WPCP sludge ponds. No other prehistoric indicators were noted in the immediate area despite concentrated inspection, and thus the find seemingly has little significance. Several other minute pieces of shell (also possibly oyster) were identified in the dirt road that forms the northern U.S. DPDA boundary in APN 15-31-63, not far from a recently excavated electrical box marked “CSJ Fiber Optics System.” This find may also be insignificant, though the find is only about 250-300 meters south of the recorded location of SCL-528. No other prehistoric cultural materials were noted at this location, but the surface was thickly covered with grasses and weeds except in the roadway.

Wiberg (2000:8) also reported a very diffuse scatter of recent to possibly historic materials observed in the plowed field in the southeastern portion of APN 15-31-54. Observed in this area were several pieces of abalone shell, plain white and patterned ceramic fragments, glass, plastic, and one piece of saw-cut bone. Most of the items appeared to be recent, though some of the ceramics may have been more than 50 years old. The William Boots structure built between 1876 and 1899 that occupied this parcel was located in the east-central portion of APN 15-31-54, along the banks of Coyote Creek. No structural remains exist at this location and no concentration of historic materials were observed in the area. Additionally, APN 15-31-2 contained abundant recent trash and several potentially historic ceramic fragments.

As illustrated in Confidential Figure 8.3-2, some areas (mostly linear facilities) that will be included in the LECEF project footprint were not inspected by Holman and Associates for the U.S. Dataport Project EIR; these uninspected areas were examined by CH2M HILL on June 22, 2001 using the same field methodology used by Wiberg (2000).

Five linear corridors were surveyed (see Confidential Figure 8.3-2): (1) the east side of Zanker Road near the north side of SR 237 north to the pump station, (2) from the pump station east along the dirt access road to the cyclone fence, (3) from the cyclone fence south to the green house complex, (4) east of the pump house and extending south toward SR 237, and (5) a powerline route that begins south of the pump house and extends northeast toward Coyote Creek.

A linear on the east side of Zanker Road was surveyed from the north side of SR 237 to the gate at the pump house. The area between the road and the fence and from the fence to the berm was surveyed. Visibility ranged from 0-100 percent. The poorest visibility was inside the cyclone fence due to heavy vegetation. The surface was previously disturbed by construction and agricultural related activities.

A linear dirt access road was surveyed from the gate at the pump station east approximately 1,600 feet to the cyclone fence. Both sides of the road contained heavy vegetation. The surface was previously disturbed by construction related activities.

A linear route extending approximately 1,700 feet from the cyclone fence south to the green house complex was surveyed. The road from the cyclone fence south and portions of the bell pepper field were surveyed in a 100 foot transect. From the beginning of the greenhouse complex heavy vegetation resulted in a transect along the cyclone fence about 25 feet wide. Heavy vegetation prohibited access through the greenhouse complex. The surface was previously disturbed by agricultural related activities.

A linear route was surveyed that began 300 feet east of the pump house and extended approximately 1,800 feet toward SR 237. A 100 foot transect was completed on the east side of the existing buried utility/pipe lines. Due to heavy vegetation cover ground visibility ranged from 0-30 percent. The surface was previously disturbed by agricultural related activities. This linear route passes over or adjacent to the location of CA-SCL-528; no surface evidence of this prehistoric archaeological site was found – probably due to poor surface visibility conditions. This linear route is no longer a proposed project element.

The final linear route is a proposed powerline route beginning about 300 feet south of the pump house and extending east about 2,600 feet north. A 200-foot corridor was surveyed. The route crossed a partially disked field and the bell pepper field. Visibility ranged from 0-100 percent. The surface was previously disturbed by agricultural related activities.

The surface of all linears had received previous ground disturbance from either construction or agricultural related activities. No cultural resources were observed on any of the linear for this project.

8.3.1.5.3 Architectural Reconnaissance

Homes, farmsteads, and commercial/industrial facilities older than 45 years are potentially significant historic resources in the project area. Holman and Associates and CH2M HILL did not observe any potentially significant historic buildings or structures within the U.S. DPDA project area.

Three residences within Holman and Associates' U.S. Dataport project site were constructed in 1923 and the early 1940s. Based upon historic and architectural evaluations on file with the City of San Jose, Department of Planning, Building and Code Enforcement, the residences located at 1515A, 1591 and 1657 Alviso-Milpitas road do not appear to be eligible for listing in the California Register of Historical Resources or in the National Register of Historic Places. In addition, they are "non-significant" under the City of San Jose's criteria for inclusion in the San Jose Historic Resources Inventory.

8.3.1.5.4 Native American Consultation

CH2M HILL contacted the NAHC by letter on June 29, 2001 to request information about traditional cultural properties such as cemeteries and sacred places in the project area. The NAHC responded on July 12, 2001 with lists of Native American contacts for the general project area; persons or organizations of Ohlone/Costanoan heritage. Each of these individuals/groups was contacted by letter on July 13, 2001. A summary of the results of consultations with the individual Native American organizations on the NAHC contact list will be included in a future filing.

The NAHC record search of the Sacred Lands file did not indicate the presence of Native American cultural resources in the immediate project area. The record search conducted at the Northwest Information Center of the California Historical Resources Information System by Holman and Associates (Wiberg, 2000) and the update search conducted for CH2M HILL failed to indicate the presence of Native American traditional cultural properties.

8.3.2 Environmental Consequences

This section describes the environmental consequences of construction of the proposed LECEF.

8.3.2.1 U.S. Dataport Project Area

The field survey of the U.S. Dataport site (Confidential Figure 8.3-2) by Holman and Associates (Wiberg, 2000:8-10) resulted in non-significant findings. No significant prehistoric or historic archaeological remains were detected from surface examination of exposed soils. No historically or architecturally significant buildings or structures are present.

Although no significant prehistoric or historic archaeological deposits were identified during the on-foot reconnaissance of the proposed U.S. Dataport project area, several isolated pieces of marine shell were observed on the surface at two locations. While these isolated pieces of marine shell do not constitute surface evidence of significant prehistoric archaeological sites, the U.S. Dataport project area is located in an archaeologically sensitive area and its geomorphologic setting is conducive for burying archaeological sites beneath alluvially deposited overburden (silts and other sediments left from episodic flooding of either Coyote Creek or the Guadalupe River. The possibility that buried archaeological sites would be disturbed or destroyed by construction cannot be ruled out unless the proposed plant site is subject to subsurface exploratory testing to check for the presence / absence of prehistoric archaeological remains. Holman and Associate's review demonstrates that the Coyote Creek corridor is particularly sensitive for the presence of buried prehistoric archaeological resources and additional research was recommended by Wiberg (2000:9).

Additionally the U.S. DPDA, according to Wiberg (2000:9) could contain important historic archaeological deposits associated with the Boots structure that occupied the Project Area, or other domestic structures identified within the Project Area. Discrete filled-in features such as privies, wells, and trash pits could exist that might contain household refuse associated with use of the property by the Boots family or subsequent residents.

8.3.2.2 LECEF Project Area

The CH2M HILL field survey of those portions of the LECEF site that were not otherwise inspected by Holman and Associates for the U.S. Dataport site (Confidential Figure 8.3-2) resulted in non-significant findings. Although one of the linears surveyed by CH2M HILL passes over or adjacent to the mapped location of CA-SCL-528, no surface evidence of site CA-SCL-528 could be found – probably due to poor surface visibility conditions. This linear that passes over or is adjacent to the mapped location of CA-SCL-528 is no longer a project element. No significant prehistoric or historic archaeological remains were detected from surface examination of exposed soils. No historically or architecturally significant buildings or structures are present.

No significant prehistoric or historic archaeological deposits were identified during CH2M HILL's on-foot reconnaissance. Nevertheless, the LECEF project area is located in an archaeologically sensitive area and its geomorphologic setting is conducive for burying archaeological sites beneath alluvially deposited overburden (silts and other sediments left from episodic flooding of either Coyote Creek or the Guadalupe River).

As documented by Holman and Wiberg (1983), a survey by Bard (1983) resulted in the discovery of prehistoric site CA-SCL-528, a small "midden" site 150 meters east of Zanker Road and 250-300 meters north of the U.S. DPDA boundary in APN 15-31-63. Subsurface mechanical testing was subsequently undertaken to determine the areal extent of the deposit (Holman and Wiberg, 1983). This work defined a low density midden measuring approximately 140 x 100 m and extending to a depth of at least 100 cm. During testing an intact Native American burial was encountered, indicating that the site was probably a habitation associated with a cemetery structure.

The possibility that buried archaeological sites would be disturbed or destroyed by construction cannot be ruled out unless the proposed project site is subject to subsurface exploratory testing to check for the presence/absence of prehistoric archaeological remains. Both Holman and Associate’s and CH2M HILL’s review demonstrates that the Coyote Creek corridor is particularly sensitive for the presence of buried prehistoric archaeological resources.

8.3.3 Cumulative Effects

Since the LECEF project would not affect known significant cultural resources (the project does not include any ground-disturbance to the mapped location of CA-SCL-528), it would not likely cause significant cumulative impacts. If construction was to encounter a large, stratified, buried prehistoric archaeological site, or discrete filled-in historic period features, the possibility of cumulative impacts would arise because such sites might be highly significant, and many have been destroyed or damaged by agricultural activity and/or commercial/industrial/residential development in the project vicinity. Given the relative low level of impact to such a site that the project would cause, it is also possible that proposed project activities would not lead to significant cumulative impacts, depending on the extent of project impact to any such discovered archaeological deposits. Any potential impact to an unknown site would be minimized by monitoring during construction (Section 8.3.4) and by stop-work procedures if a site were uncovered.

8.3.4 Mitigation Measures

The U.S. Dataport Draft EIR (DEIR) (November 2000) required implementation of the following measures to avoid or reduce potential impacts to buried cultural resources:

- The project includes a comprehensive monitoring and protection program to ensure that all subsurface resources are appropriately protected. Prior to site grading, a subsurface mechanical testing program for archaeological materials will be conducted over the entire site. Subsurface testing will look for buried or obscured prehistoric deposits and in the vicinity of the historic Boots farm, possible historic remains. Backhoe trenches would be excavated systematically at approximately 30 meter intervals and samples of excavated soils will be regularly screened to help identify small archaeological indicators. Soil logs and/or stratigraphic profiles for each trench will be maintained.
- In the event significant prehistoric or historic archaeological resources are discovered, either during the preconstruction testing program or during site grading or excavations for utility lines, all construction within a radius of 50 feet of the find would be halted, the Director of Planning, Building and Code Enforcement would be notified, and the archaeologist will examine the find and make appropriate recommendations regarding the significance of the find and the appropriate mitigation. Recommendations could include collection, recordation, and analysis of any significant cultural materials.

- In the event that human skeletal remains are encountered, the applicant is required by County Ordinance No. B6-18 to immediately notify the County Coroner. Upon determination by the County Coroner that the remains are Native American, the coroner shall contact the California NAHC, pursuant to subdivision (c) of section 7050.5 of the Health and Safety Code and the County Coordinator of Indian Affairs. No further disturbance of the site may be made except as authorized by the County Coordinator of Indian Affairs in accordance with the provisions of State law and the Health and Safety Code. The Director of Planning, Building and Code Enforcement will also be notified.
- Archaeological monitoring during ground disturbing activities such as grading and trenching for utility lines will be conducted if recommended by the archaeologist conducting the preconstruction testing program.

As documented in the U.S. Dataport DEIR (November 2000), implementation of the mitigation measures listed above would reduce potential impacts to buried prehistoric and historic cultural resources to a less than significant level (e.g., "**Less Than Significant Impact with Mitigation**"). It is CH2M HILL's considered opinion that implementation of these same U.S. Dataport DEIR measures for the LECEF project would reduce potential LECEF project impacts to buried prehistoric and historic cultural resources to a less than significant level.

In most cases, CEC's cultural resource staff believe the best mitigation strategy is to *avoid impact* to cultural resources that may be located in a given project area. Avoidance can be accomplished by having the archaeologist and project engineer demarcate cultural resource site boundaries on the ground to ensure that proposed project improvements do not impinge on the resource(s). Where a tower, road, or pipeline must be placed within 100 feet of a known archaeological site, the site can be temporarily fenced or otherwise marked on the ground as an Environmentally Sensitive Area (ESA). Construction equipment can then be directed away from the ESA, and construction personnel directed to avoid entering the ESA. In some cases, additional archaeological work will be needed to better delineate ESA boundaries.

Prior to starting construction near a designated ESA, the construction crew should be informed of the resource values involved and of the regulatory protections afforded to the resources through an employee training program.

Though significant archaeological and historical sites were not found during project field survey conducted by Holman and Associates and CH2M HILL, it is possible that subsurface construction could encounter buried archaeological remains. Since several prehistoric archaeological sites and isolated artifacts have been found in this archaeologically sensitive portion of San Jose's Rincon de los Esteros area, CH2M HILL concurs with the mitigation measures required by the City of San Jose (see above).

8.3.4.1 Pre-construction Subsurface Testing

If the City of San Jose's required subsurface testing has not been completed prior to the construction of the LECEF, the applicant would need to implement a program of pre-construction subsurface testing of its proposed ground-disturbing footprint.

Pre-construction testing is a form of enhanced survey in that surface survey cannot, in normal circumstances, result in reliable detection of buried archaeological sites. Subsurface testing, therefore, completes the survey by compensating for the presence of site-obscuring overburden.

8.3.4.2 Monitoring During Construction

In accordance with mitigation measures required by the City of San Jose, upon completion of the pre-construction subsurface testing, an archaeologist will determine if monitoring during construction is needed.

If it is determined that monitoring is needed, qualified personnel consisting of a Project Archaeologist (PA) and an Archaeological Monitor (AM), should conduct the recommended construction monitoring. The PA and the AM can be a single person, if properly qualified. Proper qualifications for a PA are the minimum qualifications for Principal Investigator on federal projects under the Secretary of the Interior's *Standards and Guidelines for Archaeology and Historic Preservation*. The AM should have 5 years of experience in conducting archaeological field projects or hold a Bachelor of Arts degree in anthropology, with an emphasis in archaeology, and have at least 1 year of experience in conducting archaeological field projects. The AM should be qualified to detect archaeological deposits in the field. In addition to site detection, the PA should be qualified to evaluate the significance of the deposits, consult with regulatory agencies, and plan site evaluation and mitigation activities.

To ensure participation by interested members of the Native American (*Ohlone* Indian) community, it is recommended that a Native American monitor be present during any needed archaeological site testing and/or data recovery operations triggered as a consequence of archaeological remains being discovered during construction. Selection of the monitor should be made through the NAHC, and the Native American monitor could be retained either directly by the project applicant or through the subconsultant conducting the actual archaeological fieldwork.

A six-point archaeological monitoring program should be implemented as follows:

1. **Preconstruction Assessment and Construction Training.** The PA and AM will visit the project area before construction begins to become familiar with site conditions. As construction begins, the PA will conduct a worker education session for construction supervisory personnel to explain the importance of, and legal basis for, the protection of significant archaeological resources. This worker education session can take place at the same time as the paleontological training session because both disciplines will involve the monitoring of excavation activities.

2. **Construction Monitoring.** The AM should be present at the construction site at all times when excavation is taking place within the zone of archaeological sensitivity. The AM's role will be to watch for buried archaeological deposits during subsurface excavations.

   If the AM identifies archaeological remains during construction, the AM should immediately notify the PA and Site Superintendent, who should halt construction in the immediate vicinity of the find, as necessary. The Superintendent and AM will use flagging tape, rope, or other means to delineate the area of the find within which construction will halt. This area should include the excavation trench from which the archaeological finds came and any piles of dirt or rock spoil from that area. Construction should not take place within the delineated find area until the PA, in consultation with CEC staff, can inspect and evaluate the find.

3. **Site Recording and Evaluation.** The PA and/or AM should follow accepted professional standards in recording any find and should submit the standard Department of Parks and Recreation (DPR) Primary Record forms (Form DPR 523) and location information to the Northwest Information Center of the California Historical Resources Information System (Sonoma State University).

   If the PA determines that the find is insignificant, construction will proceed. If the PA determines that further information is needed to evaluate significance, the CEC and State Historic Preservation Officer (SHPO) will be notified, and the consultant will prepare a plan and a timetable for evaluating the find, in consultation with the CEC and SHPO.

   Under CEQA, a find would be considered significant (would be classified as an "important archaeological resource") if it:

   - Is associated with an event or person of:
     - Recognized significance in California or American history, or
     - Recognized scientific importance in prehistory, or
   - Can provide information that is both of demonstrable public interest and useful in addressing scientifically consequential and reasonable or archaeological research questions; or
   - Has a special or particular quality such as oldest, best example, largest, or last surviving example of its kind; or
   - Is at least 100 years old and possesses substantial stratigraphic integrity; or
   - Involves important research questions that historical research has shown can be answered only with archaeological methods.

   Under the NHPA, a find is significant if it meets the National Register of Historic Places (NRHP) listing criteria at 36 CFR 60.4:

   - The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and:
     - that are associated with events that have made a significant contribution to the broad patterns of our history, or
     - that are associated with the lives of persons significant in our past, or
     - that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic

values, or that represent a significant and distinguishable entity whose components may lack individual distinction, or

– that have yielded, or may be likely to yield, information important in prehistory or history.

If human remains are found during construction, project officials are required by the California Health and Safety Code (Section 7050.5) to contact the County Coroner. If the Coroner determines that the find is Native American, he/she must contact the NAHC. The NAHC, as required by the Public Resources Code (Section 5097.98) determines and notifies the MLD, and requests the MLD to inspect the burial and make recommendations for treatment or disposal.

4. **Mitigation Planning.** If the PA and the consulting parties (the CEC, SHPO, the City of San Jose, NAHC-designated MLD, etc.) determine that the find is significant, they should prepare and carry out a mitigation plan in accordance with state (and federal if applicable) guidelines. This plan should emphasize the avoidance, if possible, of significant archaeological resources. If avoidance is not possible, the recovery of a sample of the deposit from which the archaeologist can define scientific data to address archaeological research questions should be considered an effective mitigation measure for damage to or destruction of the deposit.

   The mitigation program, if necessary, should be carried out as soon as possible to avoid construction delays. Construction should resume at the site as soon as the field data collection phase of any data recovery effort is completed. The PA will verify the completion of field data collection by letter to project owner and the CEC so that the project owner can resume construction.

5. **Curation.** The PA will arrange for the curation of archaeological materials collected during the monitoring and mitigation program at a qualified curation facility. A qualified curation facility is a recognized, non-profit, archaeological repository with a permanent Curator. The PA shall submit field notes, stratigraphic drawings, and other materials developed as part of the archaeological excavation program to the curation facility along with the collection.

6. **Report of Findings.** If buried archaeological deposits are found during construction, the PA will prepare a report summarizing the monitoring and archaeological investigation program implemented to evaluate the find or to recover data from an archaeological site as a mitigation measure. This report should describe the site soils and stratigraphy, describe and analyze artifacts and other materials recovered, and explain the site's significance. This report should be submitted to the curation facility with the collection.

   Following these mitigation measures would lower any potential project effects on archaeological resources below the threshold of significance. Though it is possible that the project would encounter significant archaeological deposits, the monitor would be present to detect, evaluate, and recover them. The monitoring and mitigation program would, therefore, be effective.

   Emergency maintenance and repair could cause impacts to cultural resources. In developing specific mitigative measures to address impacts for any site that cannot be avoided during construction. The potential for ongoing impacts to any resource that cannot be avoided through project redesign must be considered. Any mitigative data recovery should be properly scoped, in conjunction with the appropriate agencies, to address potential long-term ongoing impacts.

8.3.5 Applicable Cultural Resource LORS

8.3.5.1 Federal Statutes/Regulations

The NHPA of 1966 (as amended) established the federal government's policy on historic preservation and the programs, including the NRHP, through which that policy is implemented. Under the NHPA, historic properties include ". . . *any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places*" (16 U.S.C. Section 470w (5)).[3] The NHPA of 1966 (as amended) and its implementing regulations (16 U.S.C. Section 470 et seq., 36 CFR Part 800, 36 CFR Part 60, and 36 CFR Part 63) require the agency(ies) to consider the effect of the undertaking on historic properties and to afford the Advisory Council on Historic Preservation (ACHP) and the SHPO a reasonable opportunity to comment on any undertaking that could adversely affect cultural properties listed or eligible for listing on the NRHP.

If a Clean Water Act (CWA) Section 404 permit is required for construction (wetland fills or crossings), the NHPA of 1966 (as amended) and its implementing regulations (16 U.S.C. Section 470 et seq., 36 CFR Part 800, 36 CFR Part 60, and 36 CFR Part 63) also apply. The U.S. Army Corps of Engineers (USACE), as lead federal agency for issuing the CWA Section 404 permit, would be the lead agency for NHPA Section 106 compliance and consultation with the SHPO and ACHP would be required.

8.3.5.2 State of California Statutes

CEQA requires review to determine if a project will have a significant effect on archaeological sites or a property of historic or cultural significance to a community or ethnic group eligible for inclusion in the California Register of Historical Resources (CRHR) (CEQA *Guidelines*).

CEQA equates a substantial adverse change in the significance of a historical resource with a significant effect on the environment (Section 21084.1 of the Public Resources Code) and defines substantial adverse change as demolition, destruction, relocation, or alteration that would impair historical significance (Section 5020.1 of the Public Resources Code). Section

3 The National Register criteria for evaluation include: (1) is at least 50 years old; (2) retains integrity of location, design, setting, materials, workmanship, feeling, and association; and (3) has one or all of the following characteristics of association: (a) ". . . with events that have made a significant contribution to the broad patterns of our history;" (b) ". . . with the lives of persons significant in our past;" (c) ". . . that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction;" or, (d) ". . . have yielded, or may be likely to yield, information important in prehistory or history."

21084.1 stipulates that any resource listed in, or eligible for listing in, the California Register of Historical Resources[4] is presumed to be historically or culturally significant.[5]

Resources listed in a local historic register or deemed significant in a historical resource survey (as provided under Section 5024.1g) are presumed historically or culturally significant unless the preponderance of evidence demonstrates they are not. A resource that is not listed in, or determined to be eligible for listing in the CRHR, is not included in a local register of historic resources, or not deemed significant in a historical resource survey, may nonetheless be historically significant (Section 21084.1; see Section 21098.1).

CEQA requires a Lead Agency to identify and examine environmental effects that may result in significant adverse effects. Where a project may adversely affect a unique archaeological resource,[6] Section 21083.2 requires the Lead Agency to treat that effect as a significant environmental effect and prepare an EIR. When an archaeological resource is listed in or is eligible to be listed in the CRHR, Section 21084.1 requires that any substantial adverse effect to that resource be considered a significant environmental effect. Sections 21083.2 and 21084.1 operate independently to ensure that potential effects on archaeological resources are considered as part of a project's environmental analysis. Either of these benchmarks may indicate that a project may have a potential adverse effect on archaeological resources.

Other state-level requirements for cultural resources management appear in the California Public Resources Code Chapter 1.7, Section 5097.5 (Archaeological, Paleontological, and Historical Sites), and Chapter 1.75, beginning at Section 5097.9 (Native American Historical, Cultural, and Sacred Sites) for lands owned by the state or a state agency.

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4 The California Register of Historical Resources is a listing of ". . . those properties which are to be protected from substantial adverse change." Any resource eligible for listing in the California Register is also to be considered under CEQA.

5 A historical resource may be listed in the California Register of Historical Resources if it meets one or more of the following criteria: "(1) is associated with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States; (2) is associated with the lives of persons important to local, California or national history; (3) embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master or possesses high artistic values; or, (4) has yielded or has the potential to yield information important in prehistory or history (. . . of the local area, California or the nation)" (Public Resources Code Section 5024.1; Title 14 CCR, Section 4852).

Automatic CRHR listings include NRHP listed and determined eligible historic properties (either by the Keeper of the NRHP or through a consensus determination on a project review); State Historical Landmarks from number 770 onward; Points of Interest nominated from January 1998 onward. Landmarks prior to 770 and Points of Historical Interest may be listed through an action of the State Historical Resources Commission.

6. Public Resources Code 21083.2 (g) defines a unique archaeological resource to be: An archaeological artifact, object, or site, about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria: (1) contains information needed to answer important scientific research questions and there is a demonstrable public interest in that information; (2) has a special and particular quality such as being the oldest of its type or the best available example of its type; or, (3) is directly associated with a scientifically recognized important prehistoric or historic event or person.

The disposition of Native American burials is governed by Section 7050.5 of the California Health and Safety Code and Sections 5097.94 and 5097.98 of the Public Resources Code, and falls within the jurisdiction of the NAHC.

If human remains are discovered, the Santa Clara County Coroner must be notified within 48 hours and there should be no further disturbance to the site where the remains were found. If the remains are determined by the coroner to be Native American, the Coroner is responsible for contacting the NAHC within 24 hours. The NAHC, pursuant to Section 5097.98, will immediately notify those persons it believes to be most likely descended from the deceased Native American so they can inspect the burial site and make recommendations for treatment or disposal.

8.3.5.3 Local Laws and Regulations

8.3.5.3.1 Santa Clara County

The Santa Clara County General Plan (1995-2010) defines heritage resources as those particular types of resources, both natural and man-made, which due to their vulnerability or irreplaceable nature deserve special protection if they are to be preserved for current and future generations (Santa Clara County, 1995). Heritage resources include: historical sites, structures, and areas; archaeological and paleontological sites and artifacts; and historical and specimen trees. Cultural heritage resource protection in the General Plan consists of three basic strategies: inventory and evaluate heritage resources; prevent or minimize adverse impacts on heritage resources; and restore, enhance and commemorate resources.

Table 8.3-3 presents the applicable cultural resources laws, ordinances, regulations, and standards applicable to the project.

TABLE 8.3-3
Applicable Cultural Resources Laws, Ordinances, Regulations, and Standards

Law, Ordinance, Regulation, or Standard	Applicability	Project Conformity	AFC Reference
CEQA Guidelines	Project construction may encounter archaeological resources	Yes	Section 8.3.4
Health and Safety Code Section 7050.5	Construction may encounter Native American graves, Coroner calls NAHC	Yes	Section 8.3.4
Public Resources Code Section 5097.98	Construction may encounter Native American graves, NAHC assigns Most Likely Descendant	Yes	Section 8.3.4
Public Resources Code Sections 5097.5/5097.9	Would apply only if some project land were acquired by the state (currently no state land)	Yes	Section 8.3.4
National Historic Preservation Act	Issuance of a Clean Water Act Section 404 permit is a federal undertaking	Yes	Section 8.3.4
Archaeological Resources Protection Act	Protects archaeological resources from vandalism and unauthorized collecting on federal land	Yes	Section 8.3.5
Native American Graves Protection and Repatriation Act	Assigns ownership of Native American graves on federal land to Native American descendants or culturally affiliated organizations	Yes	Section 8.3.5
San Jose 2020 General Plan	Sets goal to preserve historically and archaeologically significant structures, sites, districts and artifacts	Yes	Section 8.3.5.4

8.3.5.3.2 City of San Jose

The City of San Jose's 2020 General Plan includes a historic, archaeological and cultural resources goal to preserve historically and archaeologically significant structures, sites, districts and artifacts in order to promote a greater sense of historic awareness and community identity and to enhance the quality of urban living (San Jose, 1994). San Jose's historic, archaeological and cultural resource policies urge:

- Preservation of historically or archaeologically significant sites during development review
- Use of the Area of Historic Sensitivity overlay and the landmark designation process of the Historical Preservation Ordinance to promote preservation of historically or architecturally significant sites and structures
- Maintenance of an inventory of historically and/or architecturally significant structures
- Creation of Historic Preservation Districts for areas with a concentration of historically and/or architecturally significant sites or structures
- Compatible design (and design review) of new development located in proximity to designated historic landmark structures and sites
- Rehabilitation of individual buildings and districts of historic significance using measures and incentives (tax relief, grants, loans, etc.)
- Relocation of structures of historic, cultural or architectural merit which are proposed for demolition because of public improvement projects
- City to require investigation during the planning process to determine if valuable archaeological remains may be affected by the project and should require appropriate mitigation measures to be incorporated into project design
- City should impose a requirement on all development permits and tentative subdivision maps that upon discovery of Native American burials during construction, development activity will cease until professional archaeological examination and reburial in an appropriate manner is accomplished
- Maintenance and protection of heritage trees and periodic updating of the heritage tree list
- City should continue and expand participation in Federal and State programs that provide tax and other incentives to rehabilitate historically or architecturally significant structures

8.3.6 Involved Agencies and Agency Contacts

Table 8.3-4 lists the state agencies involved in cultural resources management for the project and a contact person at each agency. These agencies include the California NAHC and, for federal lands, the California Office of Historic Preservation.

TABLE 8.3-4
Agency Contacts

Issue	Contact	Title	Telephone
Native American traditional cultural properties	Ms. Gail McNulty Native American Heritage Commission 915 Capitol Mall, Room 364 Sacramento, CA 95814	Associate Government Program Analyst	(916) 653-4040
Federal agency NHPA Section 106 compliance	Mr. Knox Mellon California Office of Historic Preservation P.O. Box 942896 Sacramento, CA 94296-0001	State Historic Preservation Officer	(916) 653-6624

8.3.7 Permits Required and Schedule

Except for the CEC site certification, the LECEF project will not require any additional cultural resource permits. However, in the unlikely event a federal, state or local permit is needed, the requirements of these permits are presented below.

If a CWA Section 404 permit is required for construction (wetland fills or crossings) in Coyote Creek, consultation with the SHPO and ACHP (under Section 106 of the NHPA) would be required (even though no federal land is involved in the project because federal permitting or licensing requires the USACE to consider whether the project would affect historic properties listed on or meeting the criteria for listing in the NRHP).

Similarly, use of state or public lands or acquisition of discretionary development permits are subject to CEQA. Consultation with the SHPO and / or the state or local lead agency(s) is required if the project would affect historic properties listed on or meeting the criteria for listing in the CRHR. If a previously undiscovered archaeological site is found during construction on state land the newly discovered site would require CRHR eligibility evaluation.

If the project becomes subject to federal involvement, some or all of the following Section 106 compliance procedures would be followed as appropriate:

1. If the federal agency finds no historic properties that the undertaking might affect, the agency informs the SHPO, documents the finding, and proceeds with the undertaking.
2. If the agency finds historic properties and determines that the project would not affect them, then the agency informs the SHPO and documents the finding. The SHPO has 15 days in which to object to the finding, after which the agency may proceed with the undertaking.
3. If the agency finds historic properties that the project would affect, the agency and SHPO consult to determine whether the effect would be adverse. If the agency and SHPO find that the effect would not be adverse, the agency informs the ACHP,

documents the finding, and the ACHP has 30 days in which to object to the finding. If there is no objection, the agency proceeds with the undertaking.

4. If the agency finds historic properties and determines that the project effects would be adverse, the agency and SHPO consult to determine how to mitigate these effects. This consultation culminates in a Memorandum of Agreement (MOA) between the agency, SHPO, and ACHP. The ACHP and SHPO are allotted 30 days in which to review and comment on a draft MOA. If the parties agree, the agency proceeds with the undertaking after signing and executing the MOA. If the agency does not agree to prepare an MOA, the ACHP must provide its comments on the undertaking within 60 days.

The Section 106 regulatory compliance process thus takes a minimum of 15 days if historic properties are found. This process can take from 60 to 90 days or more, depending on the complexity of the issues involved, the necessity of preparing a MOA, and other factors.

If Native American burials were discovered on federally owned land, the NAGPRA would require that the federal land management agency halt construction in the immediate vicinity of the find and contact a lineal descendant of the buried person or culturally affiliated organization. The regulations implementing NAGPRA (43 CFR 10) require that the federal agency notify the appropriate Native American persons or organizations within 3 days of the find. These regulations also require that construction activity in the immediate vicinity of the find stop for 30 days or until a written agreement is executed to adopt a recovery plan for the treatment or removal of the human remains.

It would be incumbent upon the applicant and its contractors to notify immediately these federal agencies if Native American burials and/or other archaeological remains are discovered on federal land.

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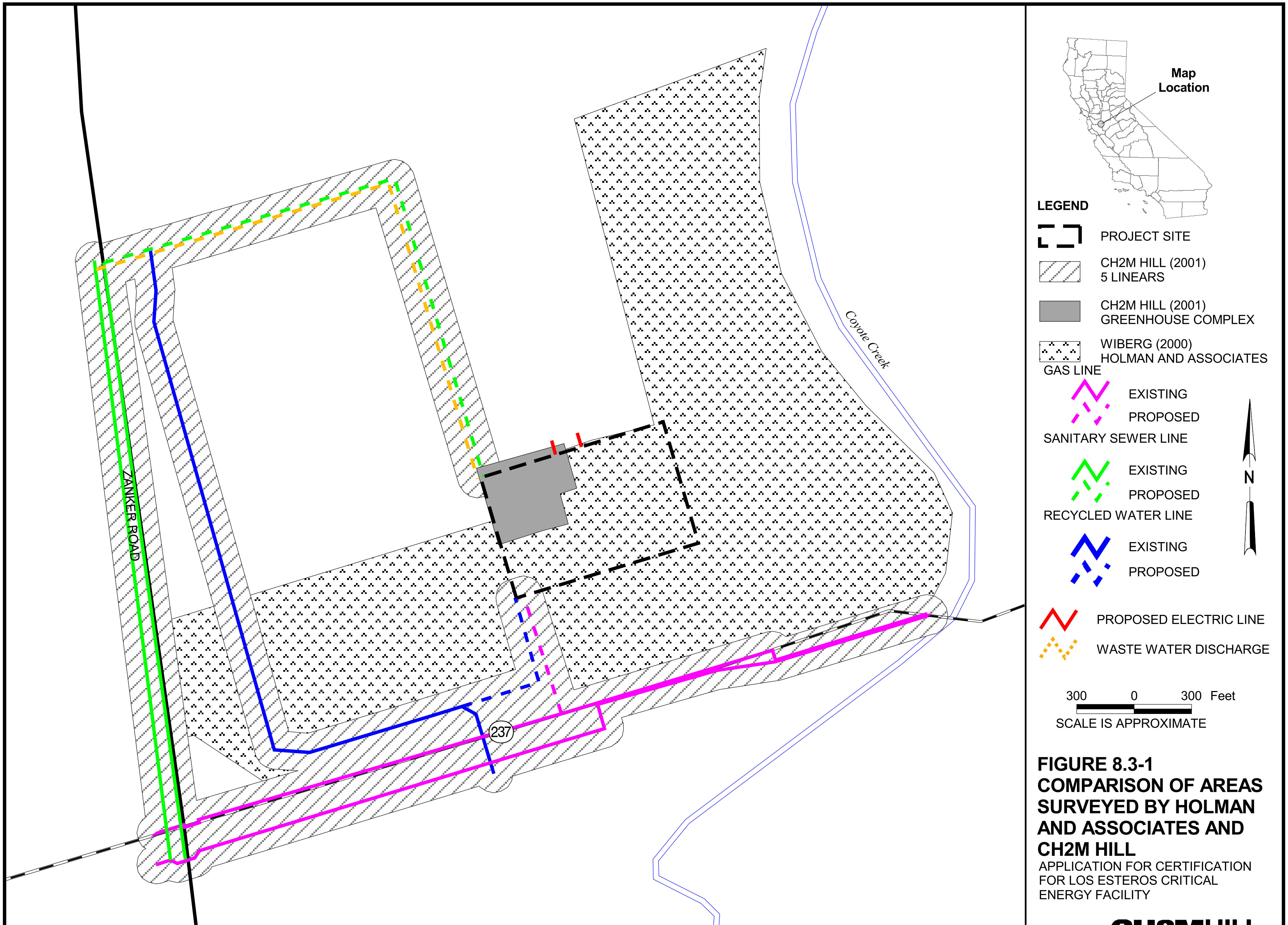

FIGURE 8.3-1
COMPARISON OF AREAS SURVEYED BY HOLMAN AND ASSOCIATES AND CH2M HILL
APPLICATION FOR CERTIFICATION FOR LOS ESTEROS CRITICAL ENERGY FACILITY

CH2MHILL

8.4 Land Use

This section provides an inventory of existing and designated land uses at the proposed project site, located on the north side of SR 237, within ¼ mile west of Coyote Creek. It also presents the land use plans and controls for the site. The data presented in this section and used to evaluate land use compatibility for the proposed project was taken from the Draft Environmental Impact Report (EIR) and Final EIR (FEIR) for the U.S. DataPort Planned Development Zoning Project (referred to as the “EIR”). The EIR addressed the rezoning and prezoning of a 174-acre parcel in connection with the development of the U.S. DataPort Project. The U.S. DataPort project was a combined 49 MW energy center (referred to as the Central Reliability Energy Center, CREC) and a 2.227 million gross square foot data center. In the City of San Jose’s ordinance approving the zoning for the U.S. DataPort project, the City Council directed the developer to consider additional options to reduce/replace the need for diesel backup generators associated with the project as designed. This proposed project is in response to that direction and can be considered as a modification, under CEQA, to the U.S. DataPort project.

Section 8.4.1 describes the existing environment, land uses and zoning designations within the study area (i.e., within 1.0 mile of the proposed site). Section 8.4.2 evaluates future growth potential associated with operation of the proposed project. Section 8.4.3 discusses the adopted local, regional, state, and federal land use plans and permits applicable to the proposed project. Section 8.4.4 describes the annexation and planned development process for the project site. Section 8.4.5 discusses the discretionary reviews by public agencies initiated or completed within 18 months prior to filing the AFC. Section 8.4.6 presents an assessment of potential land use impacts of the facility, and the project’s compatibility with existing and designated land uses and applicable plans and policies as compared to conditionally approved U.S. DataPort project. Section 8.4.7 discusses cumulative impacts and mitigation measures, and Section 8.4.8 lists the references used in this section.

Land use is controlled and regulated by a system of plans, policies, goals, and ordinances that are adopted by the various jurisdictions with land use authority over a particular area. Generally, if a parcel is within an incorporated city, it is regulated by that city. If the parcel is not located within a city, then the county has jurisdiction.

8.4.1 Affected Environment

Santa Clara County encompasses 1,300 square miles and is located at the southern end of San Francisco Bay surrounded by Alameda, San Mateo, Santa Cruz, Stanislaus, San Benito, Monterey, and Merced counties. Its 2000 population of 1.68 million makes it the largest of the nine Bay Area counties. Santa Clara County is a major employment center for the region, providing more than a quarter of all jobs in the Bay Area (Santa Clara County, 1994). Land in the unincorporated Santa Clara County is generally devoted to agriculture, recreation, and open space uses. Low-density residential developments are also scattered through the valley and foothill areas. In contrast, the urban and highly developed incorporated cities consist predominantly of residential, commercial, public/quasi-public, institutional, and industrial land uses.

The City of San Jose encompasses 171 square miles and is located south of San Francisco Bay surrounded by the cities of Milpitas, Santa Clara, Cupertino, Campbell, Saratoga, Los Gatos and Morgan Hill. The population of San Jose in 2000 was 895,000, making it the most highly populated city within the Bay Area and the third largest city in the state.

8.4.1.1 Existing Land Uses and Planning Designations

A General Plan is the vision statement for a jurisdiction's future development. It contains goals and policies to guide development into the future. The zoning code is a regulatory tool used to implement the General Plan. It contains defined zoning districts that prescribe permitted and conditional uses in those zoning districts as well as development standards and requirements such as setbacks and height limits. Zonings should be consistent with the General Plan, although they can be inconsistent when the general plan has changed and the zoning has not yet been made to conform.

Definitions of typical plan and zoning designations are listed in Table 8.4-1. Existing land uses and zoning designations in the vicinity of the project site, along with the project's linear features, are described in Table 8.4-2. The planning designations are also explained below in detail.

8.4.1.1.1 U.S. DataPort Project and Proposed Project Sites

The U.S. DataPort project site is located in the Alviso area of north San Jose. The 174.4-acre project area is bordered by State Route 237 (SR 237) to the south, cultivated agricultural land and Coyote Creek to the east, the San Jose / Santa Clara Water Pollution Control Plant (WPCP) buffer land and WPCP sludge ponds to the north and west (see Figure 8.4-1). Zanker Road is the western border of the WPCP buffer property. The U.S. DataPort project was shown in the county's General Plan as being in the San Jose Urban Service Area and included annexation of approximately 121 acres of land to the City.

The U.S. DataPort project site was comprised of three parcels: the Cilker property (66.46 acres); the former Lin-Hom property (54.6 acres); and the WPCP buffer lands (55 acres). The Cilker and former Lin-Hom properties were in a county island surrounded by the City. Therefore, the U.S. DataPort project involved annexing those parcels into the City and prezoning them to A(PD) from the county zoning of A-20s. The 55-acre WPCP parcel would also be rezoned to A(PD) from Public / Quasi Public (see Figure 8.4-3). The PD zoning allows planned development in accordance with approved specifications.

The Cilker property is cultivated with row crops and has three residences, a fruit distribution company, a tractor / trucking company storage yard and an orchard / landscaping company in the southern portion of the property. It provides a buffer between the project and Coyote Creek (Figure 8.4-1).

TABLE 8.4-1
Typical Planning Designation Definitions

Designation[1]	Examples of Permitted Uses
Mixed Use Mixed Use Gate Thoroughfare	Various uses – office, commercial, institutional, residential are combined in a single building or single site in an integrated development area

TABLE 8.4-1
Typical Planning Designation Definitions

Designation[1]	Examples of Permitted Uses
Residential Single Family Detached Single Family Attached Moderate Density Medium Density High Density	Dwelling units (allowable density increases from single family detached to high density).
Commercial Convenience Thoroughfare Community and Regional Shopping Office Tourist	Facilities for buying and selling of commodities and services
Industrial Office/Research & Development Light Heavy	Manufacture, production and processing of consumer goods. Divided into "office" uses (R&D, light industry, warehousing), "light industrial" (R&D, less intensive warehousing and manufacturing), and "heavy industrial" (construction yards, quarrying and factories).
Industrial Transition	Industrial Transition is an area that buffers residential uses from manufacturing or research and development uses.
Public Facilities	Institutional, academic, governmental and community uses that are publicly or privately owned and operated.
Institutional	Institutions include hospitals, museums, some philanthropic or religious uses, facilities for assisting the homeless or developmentally disabled, civic center, historic cemeteries.
Education	Public and private schools
Fire Stations	Safety, emergency and utility services owned and operated by the City. Includes electric substations, which are not included in any particular land use category.
Parks and Recreation	City parks and recreational facilities.
Open Space	Unimproved land and land designated to open space use
Urban Reserve	Urban reserve lands include landfill operations, recycling/transfer stations, sewer pumping plant, and other lands annexed because of nuisance (such as aircraft noise)
Transportation Transit/Station/Airport Freeways Expressways Thoroughfares Thoroughfares with landscaped median Collectors	Transportation facilities located at the airport, rail line and light rail centers and stations, and public streets right-of-way

Sources: Santa Clara County General Plan (1994)

TABLE 8.4-2
Existing Land Uses and Planning Designations

Project Component	Existing Land Uses	Santa Clara County General Plan Designations	San Jose General Plan Designations	San Jose Zoning Designations	Milpitas General Plan Designations	Milpitas Zoning Designation
Proposed Site	Agriculture Commercial Residential Open Space	Urban Service Area (USA)	Light Industrial	A(PD) Planned Development	N/A	N/A
Site Vicinity (i.e., within one mile of the proposed site)	Agriculture Commercial Residential Industrial Public Facilities Major Highway	Urban Service Area (USA)	North: Public/Quasi-Public, Alviso Planned Community West: Public/Quasi-Public; Alviso Planned Community South: Public/Quasi-Public; Public Park/Open Space; Industrial Park, Medium Density Residential; Mixed Industrial Overlay	North: Industrial Park; Heavy Manufacturing West: Light Manufacturing; Heavy Manufacturing; Industrial Park; Agricultural; One-Family Residential; Multi-Family Residential; Agricultural (Planned Development) South: Industrial Park; Agricultural (Planned Development)	East: Manufacturing & Warehousing; General Commercial; Highway Service South: Highway Service; Manufacturing & Warehousing	East: Park & Public Open Space; Industrial Park; General Commercial; Light Industrial; South: Light Industrial; Industrial Park; Agriculture

NA Not Applicable

The former Lin-Hom property was used as a plant nursery (including greenhouses), storage buildings, and included approximately 10 structures (including trailers, modular structures, and wood framed buildings) used for residential purposes prior to purchase by c*Power. The greenhouses and plant sheds have not been used for many years. Some of the other buildings were used by a former property owner. However, commercial nursery operations have not recently occured. It is proposed that this property would be partially used for the project and by PG&E for its Los Esteros substation that will be part of PG&E's Northeast San Jose Transmission Reinforcement Project (See Section 8.4.1.3 and Section 5). The portions of the former Lin-Hom property not used by either the proposed project and the Los Esteros substation remain as part of the U.S. DataPort planned development as envisioned by the City of San Jose.

The WPCP buffer property abuts the western border of the former Lin-Hom property. This property is an open, cultivated field.

High-pressure natural gas pipelines are located along a portion of the southern boundary of the property, as shown on Figure 1.1-3. The South Bay Water Recycling (SBWR) Program's recycled water transmission line extends from the SBWR transmission pump station on Zanker Road across the WPCP buffer land property roughly parallel to Zanker Road.

8.4.1.1.2 Recent Land Use Changes

On March 14, 2001, the San Jose Planning Commission certified the U.S. DataPort DEIR and FEIR as complete, and recommended approval of the project to the San Jose City Council. The EIR determination was appealed to the City Council. On April 3, 2001, the San Jose City Council, acting as lead agency under CEQA, approved the U.S. DataPort project and adopted an ordinance (No. 26343) to prezone and rezone the 174-acre U.S. DataPort site. At the same time, the City Council adopted a resolution (No. 70259) making required CEQA findings concerning the mitigation measures proposed in the EIR and adopting a statement of overriding considerations. (See Appendix 8.4-1 for copies of the ordinance and resolution.)

As a result of these actions, the former Lin-Hom and Cilker properties have been prezoned and zoned to A(PD) Planned Development, as specified by PDSCH # 00-06-048. The construction of the project on this site will, therefore, be consistent with the City's zoning ordinance. A rezoning application is being submitted to make minor modifications consistent with this AFC. The City will be a joint applicant for the rezoning since the City owns a portion of the land subject to the zoning. Annexation of the 121-acres (Former Lin-Hom and Cilker parcels) to the City of San Jose was approved by the San Jose City Council on June 19, 2001. Santa Clara County records the annexation as a ministerial function, which has not occurred as of July 31, 2001.

8.4.1.2. Project Vicinity

The predominant existing land uses in the project vicinity are a wastewater treatment plant and its buffer area, SR 237, a Santa Clara Valley Transportation Authority (VTA) bus yard, a mobile home park, wildlife refuge and agriculture and industrial uses. The area on the eastern side of Coyote Creek, which is within the City of Milpitas and bordered by McCarthy Road, is currently being developed as commercial/light industrial property. Because the linear features of the proposed project are minimal, these figures also show the respective General Plan and zoning designations within ¼ mile of the linears.

8.4.1.2.1 Agricultural Resources

The entire 174-acre U.S. DataPort site is considered prime farmland under the Farmland Mapping and Monitoring Program of the California Resources Agency (City of San Jose, 2000). Approximately 60 acres of the site is developed with structures used to support agricultural operations.

The proposed LECEF project will replace up to 15.3 acres of undeveloped prime farmland with an energy center. Construction of the project would commit all of the site development area to urban uses for the foreseeable future. Although this area has been designated for urban uses for many years and portions of the site have been developed with a variety of structures since the 1970s, site construction will constitute replacing what is considered to be prime farmland with urban development.

8.4.1.2.2 Natural Reserve

A flood control levee, which is part of the Coyote Creek Flood Control Project, is located along the eastern boundary of the Cilker property, approximately 750 feet from the project site. The Coyote Creek by-pass channel, a constructed flood control facility, borders the levee along the northern two-thirds of the Cilker property's eastern boundary. At the southern end of the Cilker property, the Coyote Creek riparian corridor borders the in-board side of the levee. Issues and potential impacts related to the proximity of the site to wildlife habitat along Coyote Creek are discussed further in Section 8.2, Biological Resources.

The Don Edwards San Francisco Bay National Wildlife Refuge, which has 3,652 acres of open space within the San Jose Sphere of Influence (19,058 acres total), is approximately 1 to 1.5 miles to the north. Refer to Section 8.2 Biology for further description.

8.4.1.2.3 Transportation Routes

The overall U.S. DataPort project site is bordered by SR 237 on the southern edge, and by Zanker Road on the west. The LECEF project site is approximately 600 feet north of SR 237 and approximately 2,000 feet east of Zanker.

Primary access to the project site is from Zanker Road, equivalent to the northern portion of the access road certified for the U.S. DataPort PDZ Project. Secondary access to the project site is from Alviso-Milpitas Road, which runs adjacent to SR 237 and dead-ends at the western border of the Former Lin-Hom property. LECEF will also use PG&E's Los Esteros access road for emergency purposes. Refer to Section 8.10, Transportation, for further details regarding transportation facilities in the project area.

8.4.1.2.4 Sensitive Receptors

There are no sensitive receptors (such as schools, daycare facilities, convalescent centers, or hospitals) in close proximity of the project site. Two schools, Anthony Spangler Elementary School and Curtner Elementary School are located in Milpitas, approximately one mile and 1.3 miles to the northeast, respectively. George Mayne Elementary School and Alviso Park are located approximately 1.4 miles to the west.

The Agnews Developmental Center (East Area) is located approximately 1.1 mile south of the center of the site. The Agnews Development Center, operated by the California Department of Development Services, provides care and treatment of persons with developmental disabilities, and also includes a gas-fired combined cycle cogeneration facility. A childcare center located at the Cisco Systems facility on Barber Lane in Milpitas, south of SR 237 and west of I-880 is located approximately 1.1 mile southeast of the project site.

The nearest residential areas are located approximately 0.6 mile southwest, 0.8 mile east, and 1.4 miles southeast of the project site.

8.4.1.2.5 Recreation

Recreational facilities in the project vicinity include the 7.5-acre Alviso Park adjacent to George Mayne Elementary School on North First Street and an 800-foot community center on Liberty Street. A new community center next to the park has recently been approved and funded. It will be combined with a new library on First Street.

Regional recreational facilities in the area include the Don Edwards San Francisco Bay National Wildlife Refuge, which has 3,652 acres within the San Jose Sphere of Influence (19,058 acres total), and the Alviso Marina County Park (approximately 28 acres total). Alviso Marina County Park is located northwest of the site, and east of the Guadalupe River.

Several trail routes cross the Alviso area. The Juan Bautista de Anza National Historic Trail and the San Francisco Bay Trail from Sunnyvale Baylands Park to the Coyote Creek, just north of the project site, are shown in the Alviso Master Plan as following the same route. Refer to Section 8.2, Biology, for locations and descriptions of these parks.

8.4.1.3 Electric Transmission Line

Electric connections would be extended approximately 400 feet from LECEF to the proposed interconnection point on the planned Los Esteros Substation, to be located adjacent to LECEF.

In the event that this point of interconnection is not available in a timely manner, then a temporary wood-pole-line would be extended from LECEF to the existing Nortech-Trimble 115 kV line located near the intersection of Zanker Road and SR 237.

8.4.1.4 Natural Gas Supply Line

Natural gas for the facility will be delivered through a new 550-foot long 10-inch diameter pipeline that will connect to the existing PG&E lines 101 and 109 located on applicant's property, adjacent to State Route 237, approximately 0.5 miles from the PG&E Milpitas Gas terminal.

The City of San Jose has adopted development guidelines for land in proximity to high pressure natural gas pipelines. For uses adjacent to, but not within pipeline right-of-ways, "only buildings having a 'low-density occupancy load' should be allowed within 250 feet of the edge of the right-of-way." Buildings assumed to have a "low-density occupancy load" include industrial buildings, such as those proposed for the project site. The closest building(s) would be located approximately 200 feet from the gas line right-of-way, which is allowed pursuant to the City of San Jose guidelines pertaining to development near gas pipelines.

8.4.1.5 Recycled Water and Sewer Lines

Recycled water used for cooling will be supplied by SBWR, which will be delivered from the WPCP. Plant process water will be supplied via a 1,000-foot-long pipeline to WPCP's existing recycled water pipeline located just west of the project site on adjacent WPCP buffer land. The project will use recycled water in the cooling towers and for landscape irrigation. Plant wastewater will be returned to WPCP together with sanitary sewage via a 2,700-foot-long pipeline to the City sanitary sewer system located on Zanker Road.

A potable water pipeline to the site will not be constructed at this time. Drinking water will be provided through a drinking water service provider (i.e., it will be trucked into and stored on-site.).

8.4.2 Future Growth Trends

According to the Santa Clara County General Plan (1994), most of the growth in the County is expected to occur in San Jose and, to a somewhat lesser extent, in the south county. The north and west valley cities are expected to experience relatively little population growth.

The project would include development of minimal infrastructure. The project site is within the City of San Jose and would not extend services outside of the urban service area. Improvements to utilities and public services would be designed to facilitate planned development, consistent with City of San Jose's goals and policies.

Originally, the energy center was to be developed as an essential part of the U.S. DataPort complex and the energy center will still ultimately serve this purpose. However, with the current energy crisis and in accordance with the guidance received by the City Council, the project was changed to provide peaking units to support the electricity shortage in advance of construction of the data center campus. The development of the data center has been separated from the development of Phase I of the project and, therefore, is not included in the analysis of this project.

The development of the project does not create a precedent that might lead to excessive or unplanned growth outside of the existing Urban Service Area.

8.4.3 Laws, Ordinances, Regulations, and Standards

This section lists the land use laws, ordinances, regulations, and standards (LORS) that are applicable to the project. Land use is largely governed by local General Plans and zoning ordinances. This section also discusses the applicability of the LORS to the proposed project.

8.4.3.1 Federal

None are applicable to the site or project.

8.4.3.2 State

The AFC process is under the Warren-Alquist Act, which is the "functional equivalent" to the California Environmental Quality Act (CEQA). The California State Planning Law, Government Code Sections 65302 et seq., also applies to this project.

8.4.3.3 Local

Land use provisions must be included in every California county and city General Plan (California State Planning Law, Government Code §65302 et seq.). Through their goals and policies, both the Santa Clara County General Plan and the San Jose General Plan guide the physical development of land within their jurisdiction. A brief overview of the land use elements within both county and city General Plans is provided below along with a description of their applicable policies.

8.4.3.3.1 Santa Clara County

The project will be fully developed in the City of San Jose. The county plans that applied to the site prior to annexation are summarized in Table 8.4-3.

County General Plan. The Santa Clara County General Plan was adopted in December 1994. The General Plan recognizes the value of a growing, diversifying economy and population, but also the need to accommodate that growth without sacrificing overall quality of life (Santa Clara County, 1994).

County Zoning Ordinance. Prior to its prezoning and annexation into the City of San Jose, the project was zoned A-20S (Agriculture, 20-acre minimum).

TABLE 8.4-3
Land Use-Related Laws, Ordinances, Regulations, and Standards – County of Santa Clara

LORS	Applicability	AFC Section Where Conformance is Discussed	Agency/Contact
General Plan (1994)	Embodies policies for land use, circulation, community facilities, and environmental resource management for Santa Clara County. It is a statement of the county's vision of its ultimate physical development.	Table 8.4-8	County of Santa Clara Planning Office Michael Lopez 70 West Hedding Street San Jose, CA 95110 (408) 299-2521
Zoning Ordinance (2001)	Establishes classes of zoning districts governing the use of the land and the placement of buildings and improvements within districts.	Table 8.4-8	Same as above
Countywide Trails Master Plan (1995)	Several proposed trails are in the vicinity of the project area.	Table 8.4-8	Same as above
Local Agency Formation Commission (LAFCO)	Annexation of land into a city is under the auspices of LAFCO	Table 8.4-8	Same as above

Countywide Trails Master Plan. Santa Clara County has incorporated a Trails Master Plan into its General Plan. The plan shows planned trails and provides policies for a countywide network of trails that connect cities to the County's regional open space resources and park areas. The plan is intended to provide direction for the location of future trail corridors and connections.

Local Agency Formation Commission. The Local Agency Formation Commission (LAFCO) implements policies related to the efficient growth and development of urban areas and the preservation of open space and agricultural uses. LAFCO's policies are intended to limit urban development to locations adjacent to existing urban areas where urban services can be most efficiently provided, without undue hardship on service providers. The LAFCO policies are intended to ensure that establishment of logical boundaries for development and the extension of urban services.

8.4.3.3.2. City of San Jose

The relevant city plans that apply to the project are summarized in Table 8.4-4.

San Jose 2020 General Plan, 1994. The San Jose General Plan is a "blueprint" for the San Jose planning area. The Major Strategies of the General Plan establish the planning framework.

TABLE 8.4-4
Land Use-Related Laws, Ordinances, Regulations, and Standards – City of San Jose

LORS	Applicability	AFC Section Where Conformance is Discussed	Agency/Contact
San Jose 2020 General Plan (1994)	Embodies policies for land use, circulation, community facilities, and environmental resource management for San Jose. It is a statement of the city's vision of its ultimate physical development.	Table 8.4-6	San Jose Department of City Planning and Building Andrew Crabtree 801 N. First Street, Rm. 400 San Jose, CA 95110 (408) 277-4576
City of San Jose Zoning Ordinance (2001)	Establishes classes of zoning districts governing the use of the land and the placement of buildings and improvements within districts.	Table 8.4-6	Same as above
Alviso Master Plan, City of San Jose, 1998	Establishes the location, intensity, and character of land uses; the circulation pattern; and necessary infrastructure improvements to support development. Includes land use objectives and policies for development within the Master Plan area. IS THIS SITE WITHIN THE MASTER PLAN AREA?????	Table 8.4-6	Same as above

The following is from the General Plan:

> "The Economic Development Major Strategy is designed to maximize the economic potential of the city's land resources while providing employment opportunities for San Jose's residences. The Growth Management Major Strategy addresses the need to balance the urban facilities and services demands of new development with the need to balance the city's budget…The Downtown Revitalization Major Strategy emphasizes the importance of a prominent and attractive Downtown as a catalyst that will bring new investment, residences, business visitors and new life to the center city.
>
> The Urban Conservation/Preservation Major Strategy underscores the importance of protecting and enhancing San Jose's neighborhoods to promote residents' pride in the quality of their living environments. And the Greenline Major Strategy is directed to preserving the scenic backdrop of the hillsides surrounding San Jose, preserving land that protects water, habitat or agricultural resources, and offers recreational opportunities.

> The Housing Major Strategy acknowledges the city's long-time understanding of its role in the provision of housing to shelter its residents. The overall objective of the strategy is to provide a wide variety of housing opportunities to meet the needs of all the economic segments of the community in stable neighborhoods.
>
> By promoting the conservation of natural and manmade resources, the Sustainable City Major Strategy seeks to ensure San Jose's ability to meet its future service needs while preserving its healthy living environment."

Other relevant strategies include: Sustainable City Strategy, Balanced Community Policy #1, Industrial Land Use Policy #1, Economic Development Policy #1, Urban Service Area Policy #1, Urban Design Policies #11 and 17; Trails and Pathways Policies nos. 1, 2, 7, and 9; North San Jose Development Policy. Each of these is briefly described below.

- **Sustainable City Strategy**
  This strategy reflects the City's desire to become an environmentally and economically sustainable city, minimizing waste and efficiently using its natural resources.

- **Balanced Community Policy**
  #1 The City should foster development patterns that will achieve a whole and complete community in San Jose and improve the balance between jobs and housing.

- **Industrial Land Use Policy**
  #1 Industrial development should incorporate measures to minimize negative impacts on nearby land uses.

- **Economic Development Policy**
  #1 The City is striving to reduce the imbalance between housing and employment by seeking to obtain and maintain an improved balance between jobs and workers residing in San Jose.

- **Urban Service Area Policy**
  #1 The General Plan designated an Urban Service Area where services and facilities provided by the City and other public agencies are generally available and where urban development requiring such services should be located.

- **Urban Design Policies**
  #11 Non-residential building height should not exceed 45 feet, except for structures, other than buildings, where substantial height is intrinsic to the function of the structures and where such structures are located to avoid significant adverse effects on adjacent properties, height limits may be established in the context of project review.

  #17 Development adjacent to creekside areas should incorporate compatible design and landscaping including plant species that are native to the area or are compatible with native species.

- **Trails and Pathways Policies**
  #1 The City should control land development along designated Trails and Pathways Corridors to provide sufficient trail right-of-way and to ensure that new development adjacent to the corridors does not compromise safe trail access nor detract from the scenic aesthetic qualities of the corridor.

#2 When new development occurs adjacent to a designated Trails and Pathways Corridor, the City should encourage the developer to install and maintain the trail.

#7 Trails should be built to meet the trail standards established by the Department of Public Works.

#9 Trails and pathways should be designed and constructed in a manner that allows safe access to each type of trail experience of people of all abilities to the maximum extent possible.

- **North San Jose Area Development Policy**
  The North San Jose Area Development Policy was adopted by the City in 1988 and applies to the industrial area that is generally south of SR 237, west of I-880, and northeast of U.S. 101 (also known locally as the Golden Triangle Area). Among the features of this transportation management policy is an assumption that all vacant industrial parcels would be built with a maximum floor area ratio of 0.35. Industrial uses serving commercial uses are exempted from the FAR assumptions.

Zoning Ordinance. San Jose's zoning ordinance, recently updated earlier this year, is enforced by the City's planning and building department. The project site was rezoned to planned development, which allows the City to tailor the development requirements to meet the specific area and development needs. A PD rezoning application will reflect the modifications to the zoning consistent with this AFC.

Alviso Master Plan. The Alviso Master Plan is a policy document, separate from the 2020 General Plan, that provides the background, vision and character to guide the future of the Alviso Planned Community. The Master Plan establishes the location, intensity, and character of land uses; the circulation pattern; and necessary infrastructure improvements to support development. Also, the Master Plan consists of the objectives, policies, design guidelines, and implementation measures to direct future development of residential, commercial, industrial, mixed, and open space uses in the Plan area. The land uses outlined in the Master Plan have been incorporated into the San Jose 2020 General Plan in the form of the Alviso Planned Community. Key policies are described below:

- **Community Character**
  The intent of the community character policies are to ensure that new development contributes in a positive way to Alviso's small town character by fostering and encouraging buildings of appropriate scale, materials, and design, and with uses that support community interaction. The design guidelines generally require buildings to be a maximum of 45 feet or 2 stories in height, but allow for higher buildings (up to 90 feet) to be clustered near SR 237 to avoid development adjacent to sensitive areas.

- **Environmental Protection**
  The intent of the environmental protection policies is to protect the natural features and plant and wildlife species of the Alviso area from degradation as a result of development.

#1 All new parking, circulation, loading, outdoor storage, utility, etc. activities must be located on paved surfaces with proper drainage to avoid potential pollutants from entering the groundwater, Guadalupe River, Coyote Creek, or San Francisco Bay.

#4 To mitigate the loss of specific wildlife habitat due to development, certain lands should be set aside to provide needed habitat.

#5 To protect aquatic habitats that receive stormwater runoff, all new development must comply with adopted City Council policy entitled, "Post-Construction Urban Runoff Management."

- **Gateway Entrances**
  The gateway entrances objective states that development located near SR 237 along both sides of Gold Street, First Street, and Zanker Road should foster a "gateway" feel through building orientation and other features.

  Lands Outside the Village Area—The lands outside the village area design objective states that due to high visibility, development should be attractive, should fit in the context of the larger community; and should reflect some of the elements and materials of seaside styles to contribute to Alviso's sense of place.

  Lands Outside the Village Area—Industrial Development Guidelines: The industrial development guidelines for lands outside of the village area seek to establish a positive relationship at the edge of the Alviso area between industrial and non-industrial uses. These guidelines identify development standards, such as height and setback requirements, building design, material, and architectural features requirements, and flood mitigation requirements.

- **Trail Circulation**
  The Alviso Master Plan includes an objective that calls for the construction and maintenance of single and multiple use trails within Alviso.

8.4.4 Annexation and Planned Development Process

Prior to the U.S. DataPort entitlement actions, the Former Lin-Hom and Cilker properties were within the Urban Service Area of the City of San Jose, but outside its corporate limits. Development of those properties as part of the U.S. DataPort project site required prezoning and annexation into the City of San Jose. In Santa Clara County and the City of San Jose, annexations are called "reorganizations." Land is annexed to the City and, simultaneously, detached from special districts, such as fire or sanitation districts.

The U.S. DataPort project included the annexation of approximately 121 acres to the City of San Jose. The annexation of these properties eliminates an "island" of unincorporated territory at the edge of the City. The prezoning and annexation of the U.S. DataPort site is consistent with General Plan and LAFCO policies related to annexation and provision of 6urban services. Figure 8.4-1 shows the former Lin-Hom and Cilker parcels, which are within the City of San Jose's Urban Service Area as described in Table 8.4-5. The annexation was approved by the City Council on June 19, 2001 by Resolution No. 70408 (see Appendix 8.4-1). The County of Santa Clara, which records annexations as a ministerial function, has not yet recorded this annexation as of July 31, 2001.

The U.S. DataPort site was prezoned from A-20S (which allows agriculture on 20 acre parcels) in the County to A(PD) in the City. The prezoning is consistent with the City of San Jose's General Plan designation for these parcels.

The prezoning and rezoning process was completed on April 3, 2001 with the passage of Ordinance No. 26343, "Ordinance of the City of San Jose Prezoning and Rezoning Certain

Real Property Situated on the North Side of State Route 237, between Zanker Road and Coyote Creek" (see Appendix 8.4-1). The Ordinance specifies that the PD zoning (PDSCH # # 00-06-048) of the property is the development plan entitled "Planned Development Zoning, U.S. DataPort." Conditions, in addition to those in the General Plan, were incorporated by the Ordinance into the detailed zoning and are summarized below as they apply to the compelling necessity to develop this modification, as envisioned by this AFC, to the U.S. DataPort planned development:

TABLE 8.4-5
Annexation Table

APN	Acres	City of San Jose General Plan	County Zoning	City Prezoning
015-031-054	66.46	Alviso Planned Community: Light Industrial	A-20S	A(PD)
015-031-002	54.6	Alviso Planned Community: Light Industrial	A-20S	A(PD)

- The use of diesel generators is limited to 25 hours per year. [This is one of the conditions that encouraged the redesign of the CREC plant to the proposed project.]
- Thirty percent of the acreage will be designated for open space, which is included as part of the EIR project's zoning: 1.8 acres of open space setbacks; 23.2 acres of private open space; a trail easement; and landscaping as specified in the Alviso Master Plan and that is conducive for burrowing owl habitat; and landscaping on 27.53 acres of open space on the Water Pollution Control Plant's buffer lands. [Applies only to the U.S. DataPort portion of the project].
- The use of recycled water for process water.
- Development will comply with the San Jose 2020 General Plan noise guidelines.
- Development will not create glare or other negative lighting impacts to the Coyote Creek riparian corridor.
- The number of employees (associated with the energy center) will be limited to 50.
- The access road proposed to cross the WPCP buffer lands will be located on a recorded easement or otherwise established through appropriate documentation.
- These conditions are subject to the execution of a mutually acceptable Development Agreement between the applicant and the City of San Jose.

Resolution Number 70259, which was also passed by the City Council on April 3, 2001, made EIR findings regarding land use impacts from the U.S. DataPort project (see Attachment 8.4-1). It was resolved that the development of the U.S. DataPort project would result in the loss of prime farmland to non-agricultural uses and that the loss would be a significant impact. However, mitigation measures are not available to reduce the loss of open space or agricultural land. Therefore, the City Council found that this impact is significant and unavoidable and accepted the impact with overriding considerations.

8.4.5 Other Discretionary Reviews by Public Agencies

Projects within the general vicinity that have recently been approved, or are in the planning process includes the following:

A 1.2 million square foot office building campus was recently approved for the Palm Corporation. This development is located approximately 1 mile due west of the project site. According to the City of San Jose Planning Department, this development is not likely to be built under the current tenantcy for financial reasons.

Cisco Systems campus (2.5 million square feet) would be located approximately 1 mile west of the project site.

A 2,400-unit apartment complex, built by the Irvine Company, would be located approximately 1 mile south of the project site.

A General Plan Amendment has been applied for a site approximately 2 miles northwest of the site, to change the zoning to residential.

On May 8, 2001, the City of San Jose released a Request for Qualifications (RFQ) seeking power generation firms to develop renewable energy generation and / or stationary peaking plants. In response to this RFQ, the City Council has directed the City Manager to begin negotiations with two respondents, one of which is seeking to develop a 90 MW plant. The other respondent is proposing a 180 to 270 MW plant, both plants are proposed to be located on the WPCP buffer lands (west of the project site).

On June 14, 2001, the San Jose City Manager was directed to release a Request for Proposal (RFP) by September 2001 for development of a large power plant (500+ MW) on WPCP lands, presumably to be located near or adjacent to the planned PG&E Los Esteros Substation and the applicant’s LECEF Site.

The California Public Utilities Commission has recently approved the construction by PG&E of its Northeast San Jose Transmission Reinforcement Project. As part of this project PG&E will be constructing a 24-acre combined transmission substation and distribution substation, called Los Esteros, adjacent to the north boundary of the energy center project site. The project would also include construction of a 7.3-mile-long, 230 kV double-circuit transmission line from the Los Esteros Substation to the Newark Substation. These new power lines are proposed to approach the substation from the north through the WPCP sludge drying ponds and enter the substation from the west then exit the substation again to the west prior to turning south toward the intersection of Zanker Road and SR 237.

Major projects approved by the City of Milpitas Department for 2001 include the following (Burkey, 2001):

- Veritas Software Campus - 65 acres of campus industrial totaling 990,000 square feet of office space located north of State Route 237, southwest of McCarthy Boulevard. Construction of Phase 1 of this project has commenced.
- Irvine Company Business Park – One million square feet of business park space located north of State Route 237 and northeast of McCarthy Boulevard. Construction has begun on the business park, but a completion date is not available at this time.
- Office Park Developments – One office park (400,000 square feet of office space) has been approved and being constructed south of State Route 237 and east of Interstate 880.

A second office park development (240,000 planned square feet of office space) is in the approval process in the State Route 237 and Tasman area.

- High and Medium Residential Development – New high and medium residential areas are being proposed southeast of State Route 237, east of Interstate 880. However, no residential developments are being considered within one mile of the project site.

Major projects approved by the City of San Jose Planning Department for 2001 include the following (Crabtree, 2001):

- Palm Corporation – 1.2 million square feet of office space is being constructed approximately 1 mile west of the project site.
- Cisco Systems – Industrial campus consisting of 2.5 million square feet of office space, approximately 1 mile west of the project site.
- Irvine Company – 2,400-unit apartment complex, approximately 1 mile south of the project site.

8.4.6 Environmental Consequences

8.4.6.1 Significance Criteria

Land use significance criteria were determined through review of applicable state and local regulations. The following criteria were used to evaluate the potential environmental impacts of the project. A land use impact was considered significant if the project will:

- Substantially adversely change the type or intensity of existing or planned land use in the area.
- Be incompatible with adjacent land uses or with the general character of the surrounding area, including density and building height.
- Conflict with established residential, recreational, educational, religious, or scientific uses of an area
- Convert prime agricultural land to non-agricultural use, or impair the agricultural productivity of prime agricultural land

8.4.6.2 Potential Effects on Land Use

8.4.6.2.1 Project Site and Surrounding Area

As defined by the above criteria, the project will not have a significant land use impact on the surrounding area. The proposed project will change the character of the project site by replacing historic agricultural and commercial uses with contemporary industrial uses. However, the proposed land use is consistent with the land use designations for the rezoning of the project site and consistent with recent entitlement actions by the City Council.

As a result of this project up to 15.3 acres of farmland (currently developed with dilapidated greenhouses, assorted residential buildings, and other structures) will be converted to industrial uses. For the purposes of this analysis, this conversion is not considered a significant impact since the City of San Jose has previously made the finding of overriding consideration as part of the U.S. DataPort project. Therefore, no new impact has been created.[1]

Activity on and around the site, including traffic, will minimally increase during operation of the project. The construction phase of the project will create noise, activity, and dust. Future development of the adjacent U.S. DataPort project would result in new industrial park development in close proximity to Coyote Creek, creating the potential for impacts to wildlife using the riparian corridor. However, the U.S. DataPort project will be between the proposed LECEF project and the Coyote Creek riparian area.

8.4.6.2.3 Linear Routes

Two existing natural gas pipelines run through the applicant's property adjacent to SR 237. The project will be able to tap into those pipelines with minimal disturbance outside the applicant's property. All of the other linear facilities (electrical transmission, recycled water supply, waste water discharge, storm water drainage, and access roads) are short in length, with none exceeding the length of the 2,700-foot access road. LECEF will be able to interconnect all of their linear facilities with minimal disturbances.

8.4.6.3 Compatibility with Plans and Policies

The proposed project is compatible with the goals and policies of applicable plans and consistent with the direction received by the San Jose City Council.

8.4.7 Cumulative Impacts

The EIR evaluated cumulative impacts from the proposed U.S. DataPort project based on CEQA Guidelines (Section 15355), which define cumulative impacts as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts." Similarly, the AFC process requires a discussion of the compatibility of the proposed project with expected land uses and conformity with long-range land use plans and policies.

Based on the analysis presented in the EIR, and on information from other recent environmental documents, development of the U.S. DataPort site in consideration with other pending and approved projects in the area would have cumulatively significant impacts in the following areas:

- Loss of Agricultural Land and Open Space
- Air Quality
- Biological Resources
- Visual Resources
- Utilities and Service Systems

[1] A similar situation occurred with the Metcalf Energy Center. The General Plan was changed from Agricultural to Campus Industrial. At that time, the City acknowledged that this action would create a conversion of prime farmland to non-agricultural use and made finding of overriding consideration. In the proceeding, the committee determined in the PMPD that "[t]he City's General Plan redesignating the North Coyote Valley area as Campus Industrial anticipated the unavoidable conversion of prime farmland as evidenced by the EIRs for the Master Development Plan and the CRP/Cisco project." Consequently, the committee found that there was no significant impact from the later development of the power plant. (Metcalf Energy Center, 99-AFC-3, PMPD pp. 316-319.)

TABLE 8.4-6

Summary of Required Entitlement Processes

Compliance Needed	Document and Page	Applicability	AFC Section Where Conformance is Discussed	Permit Application Process	Agency/Contact
Annexation/ Prezoning	San Jose Zoning Ordinance (2001), Section 201.20.300-310, page 182-183	See Section 8.4.3.1.3	Table 8.4-8	See Section 8.4.3.1.3	San Jose Department of City Planning and Building Laurel Prevetti 801 N. First Street, Rm. 400 San Jose, CA 95110 (408) 277-4576
Planned Development (PD) Zoning	San Jose Zoning Ordinance (2001) Section 20.60, pg. 48.	Tailors land use regulations to the site; enables the City Council to consider the unique characteristics of a site and its surroundings to better implement the General Plan	Table 8.4-8	Applicant submits designs and plans to the planning staff. The planning staff submits a report and recommendation to the Planning Commission. The Planning Commission holds a public hearing to review the application and certifies the EIR. The Planning Commission makes a recommendation to the City Council. The City Council hears the EIR certification if it is appealed, otherwise it reviews and considers the EIR and decides whether to approve the application. The process usually takes four to six months, depending on potential impacts. However, in proposed project's case, the process will depend on the timing of the CEC's review process.	Same as above
Planned Development (PD) Permit	San Jose Zoning Ordinance (2001), Section 20.100.900, pg.156.	Functions as a conditional use permit to address aesthetic and operational aspects of development	Table 8.4-8	Applicant submits designs and plans to the planning staff after PD Zoning approval. The planning staff submits a report and recommendation to the Planning Director. The Planning Director holds a public hearing. After the public hearing, the Planning Director makes a decision on whether to approve the permit. (A Director's hearing is conducted every Wednesday.) The Director's decision may be appealed to the Planning Commission. The process usually takes 3-4 weeks, depending on potential impacts.	Same as above

Sources: City of San Jose, 1994 and 2001

The EIR identified the following reasonably foreseeable development projects, as shown in Table 8.4-7.

TABLE 8.4-7
Reasonably Foreseeable Cumulative Development Projects

Development	Use	Size		Jurisdiction
Rivermark-Agnews West	Residential Commercial Office/R&D School/Library/ Park	*Residential*: *Commercial:* *Office/R&D*: *Other:*	2,734 units 240,000 square ft. 150 room hotel 250,000 sq. ft. 500 student school, public library, park	City of Santa Clara
Creekside Plaza	Office/R&D	265,000 square feet		City of San Jose
Northeast San Jose Transmission Reinforcement Project	Electric Transmission and substation	7.3-mile transmission line, 24-acre substation, and facility upgrades		Cal. PUC; Alameda and Santa Clara Counties; including Cities of Fremont, Milpitas, San Jose and Santa Clara
Metcalf Energy Center	Power plant	600 megawatt facility		Cal. Energy Commission (CEC); City of San Jose (Responsible Agency)

However, development of the project based on the evaluations presented in this chapter, and with the recent U.S. DataPort project approval, is consistent with expected land uses (as evidenced by the development of PG&E's Los Esteros Substation and San Jose's recent RFQ and RFP seeking for development of additional power generation on its adjacent WPCP buffer lands) and conforms to the long-range plans and policies for the area. In terms of the cumulative significant impacts identified in the EIR, development of the project does not create an incremental impact to the loss of agricultural land, air quality, biological resources and visual resources that would be significant beyond those impacts addressed in the EIR.

The development of the project provides a beneficial impact to electrical service systems as it will allow c*Power to fulfill its' contractual obligation with the State of California to supply electricity and support the Silicon Valley electrical system and allows the future USD planned development to be self-sufficient.

TABLE 8.4-8
Compatibility with the Plans and Policies

Plan	Goal/Policy	Consistency
Santa Clara County	**Countywide Trails Master Plan.** This Master Plan is intended to provide direction for the location of future trail corridors and connections.	✓ This Master Plan is not applicable to the project since the site is not adjacent to any existing or planned trails.
	Local Agency Formation Commission. LAFCO policies are intended to ensure the establishment of logical boundaries for development and the extension of urban services.	✓ The project site (Former Lin-Hom property) was part of a county island. Annexation into the City of San Jose was consistent with LAFCO policy.
San Jose General Plan	**Economic Development Major Strategy.** Designed to maximize the economic potential of the city's land resources while providing employment opportunities for San Jose's residents.	✓ The project provides needed electrical power under State contract to help maximize the potential of the city's land resources. It will also provide temporary and permanent employment for the local workforce and provides substantial tax benefits to fund services for residents.
	Growth Management Major Strategy. Addresses the need to balance the urban facilities and services demands of new development with the need to balance the city's budget.	✓ This Major Strategy is not applicable to the project since housing demands are minimal.
	Downtown Revitalization Major Strategy. Emphasizes the importance of a prominent and attractive Downtown as a catalyst that will bring new investment, residences, business visitors and new life to the center city.	✓ This Major Strategy is not applicable to the project since it is not located in the downtown area..
	Urban Conservation/Preservation Major Strategy. Underscores the importance of protecting and enhancing San Jose's neighborhoods to promote residents' pride in the quality of their living environments.	✓ This Major Strategy is not applicable to the project since the site is not urban.
	Greenline Major Strategy. Directed to preserving the scenic backdrop of the hillsides surrounding San Jose, preserving land that protects water, habitat or agricultural resources, and offers recreational opportunities.	✓ This Major Strategy is not applicable to the project since the project site is not adjacent to Coyote Creek.
	Housing Major Strategy. Acknowledges the city's long time understanding of its role in the provision of housing to shelter its residents. The overall objective of the strategy is to provide a wide variety of housing opportunities to meet the needs of all the economic segments of the community in stable neighborhoods.	✓ This Major Strategy is not applicable to the project since housing demand is small.

TABLE 8.4-8
Compatibility with the Plans and Policies

Plan	Goal/Policy	Consistency
San Jose General Plan (Cont.)	**Sustainable City Major Strategy.** By promoting the conservation of natural and manmade resources, the Sustainable City Major Strategy seeks to ensure San Jose's ability to meet its future service needs while preserving its healthy living environment.	✓ The project will provide an efficient source of energy to sustain existing service needs as well as support planned future growth. The project will also provide a beneficial reuse of wastewater through its turbine emission reduction and cooling tower process, thereby reducing discharges to San Francisco Bay. The project will replace proposed polluting diesel back-up generation with clean natural gas-fired generation.
	Balanced Community Policy #1. The City should foster development patterns that will achieve a whole and complete community in San Jose and improve the balance between jobs and housing.	✓ The project will provide approximately 10-20 full-time jobs while creating substantial tax revenue. Thus, it helps achieve a jobs/housing balance by minimizing the need for housing while increasing the tax base.
	Industrial Land Use #1: Industrial development should incorporate measures to minimize negative impacts on nearby land uses.	✓ The project's design includes measures to minimize negative impacts on nearby land uses. In addition, the project site is isolated from existing residential areas by SR 237.
	Economic Development Policy #1. The City is striving to reduce the imbalance between housing and employment by seeking to obtain and maintain an improved balance between jobs and workers residing in San Jose.	✓ The project will provide approximately 10-20 full-time jobs while creating substantial tax revenue. Thus, it helps achieve a jobs/housing balance by minimizing the need for housing while increasing the tax base.
	Urban Service Area Policy #1. The General Plan designated an Urban Service Area where services and facilities provided by the City and other public agencies are generally available and where urban development requiring such services should be located.	✓ The project is located within the City of San Jose.
	Urban Design Policy #11. Non-residential building height should not exceed 45 feet, except for structures, other than buildings, where substantial height is intrinsic to the function of the structures and where such structures are located to avoid significant adverse effects on adjacent properties, height limits may be established in the context of project review.	✓ Height limits for the project will be established in the context of project review.
	Urban Design Policy #17. Development adjacent to creekside areas should incorporate compatible design and landscaping including plant species that are native to the area or are compatible with native species.	✓ This design policy is not applicable to the project since the site is not adjacent to Coyote Creek.

TABLE 8.4-8
Compatibility with the Plans and Policies

Plan	Goal/Policy		Consistency
San Jose General Plan (Cont.)	**Trails and Pathways Policy #1.** The City should control land development along designated Trails and Pathways Corridors to provide sufficient trail right-of-way and to ensure that new development adjacent to the corridors does not compromise safe trail access nor detract from the scenic aesthetic qualities of the corridor.	✓	This is not applicable to the project since the site is not adjacent to any existing or planned trails
	Trails and Pathways Policy #2. When new development occurs adjacent to a designated Trails and Pathways Corridor, the City should encourage the developer to install and maintain the trail.	✓	This is not applicable to the project since the site is not adjacent to any existing or planned trails
	Trails and Pathways Policy #7. Trails should be built to meet the trail standards established by the Department of Public Works.	✓	This is not applicable to the project since the site is not adjacent to any existing or planned trails
	Trails and Pathways Policy #9. Trails and pathways should be designed and constructed in a manner that allows safe access to each type of trail experience of people of all abilities to the maximum extent possible.	✓	This is not applicable to the project since the site is not adjacent to any existing or planned trails
	North San Jose Area Development Policy. The North San Jose Area Development Policy includes an assumption that all vacant industrial parcels would be built with a maximum floor area ratio (FAR) of 0.35.	✓	Industrial uses serving commercial uses are exempted from the FAR assumptions.
Alviso Master Plan	**Community Character.** The intent of the community character policies are to ensure that new development contributes in a positive way to Alviso's small town character by fostering and encouraging buildings of appropriate scale, materials, and design, and with uses that support community interaction.	✓	The design guidelines generally require buildings to be a maximum of 45 feet or 2 stories in height, but allow for higher buildings (up to 90 feet) to be clustered near SR 237 to avoid development adjacent to sensitive areas. The site will be part of a cluster of buildings near SR 237.
	Environmental Protection #1. All new parking, circulation, loading, outdoor storage, utility, etc. activities must be located on paved surfaces with proper drainage to avoid potential pollutants from entering the groundwater, Guadalupe River, Coyote Creek, or San Francisco Bay	✓	The project site will be graded so that stormwater is routed to a collection basin prior to discharge to Coyote Creek. Portion of the plant where hazardous chemicals are used or stored will be paved to prevent a release to the soil and/or groundwater.
	Environmental Protection #4. To mitigate the loss of specific wildlife habitat due to development, certain lands should be set aside to provide needed habitat.	✓	Not applicable to this site since a portion of the U.S. DataPort site has been set aside as open space to provide wildlife habitat.
	Environmental Protection #5. To protect aquatic habitats that receive stormwater runoff, all new development must comply with adopted City Council policy entitled, "Post-Construction Urban Runoff Management."	✓	The project site will be graded so that stormwater is routed to a collection basin prior to discharge to Coyote Creek. The project will comply with the provisions of this policy.

TABLE 8.4-8
Compatibility with the Plans and Policies

Plan	Goal/Policy		Consistency
	Gateway Entrances: Lands Outside the Village Area. Development should be attractive, should fit in the context of the larger community; and should reflect some of the elements and materials of seaside styles to contribute to Alviso's sense of place.	✓	The project has been designed to fit into the context of the surrounding development, i.e, the data center and PG&E substation. This site is part of the larger U.S. DataPort site, which will provide a buffer and substantial landscaping along SR 237 to provide a gateway to the area.
	Gateway Entrances: Lands Outside the Village Area—Industrial Development Guidelines. The industrial development guidelines for lands outside of the village area seek to establish a positive relationship at the edge of the Alviso area between industrial and non-industrial uses. These guidelines identify development standards, such as height and setback requirements, building design, material, and architectural features requirements, and flood mitigation requirements.	✓	The project has been designed to fit into the context of the surrounding development, i.e, the data center and PG&E substation. This site is part of the larger U.S. DataPort site, which will provide a buffer and substantial landscaping along SR 237 to provide a gateway to the area. In addition, height, setback, building design, material, and architectural features requirements, and flood mitigation requirements will meet the City's criteria through the PD approval process.
	Trail Circulation. The Alviso Master Plan includes an objective that calls for he construction and maintenance of single and multiple use trails within Alviso.	✓	This is not applicable to the project since the site is not adjacent to any existing or planned trails

8.4.7 References

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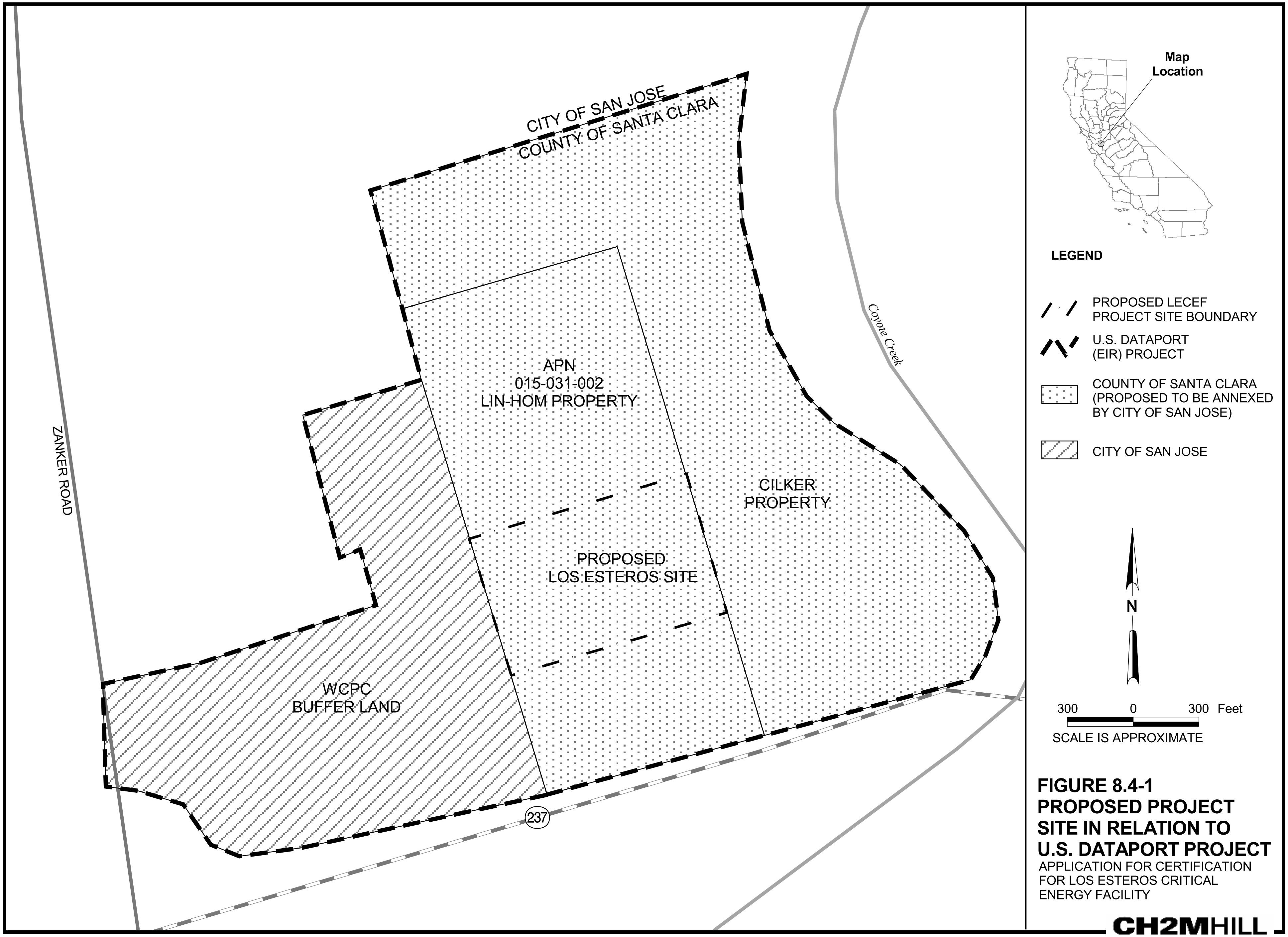


FIGURE 8.4-1
PROPOSED PROJECT SITE IN RELATION TO U.S. DATAPORT PROJECT

APPLICATION FOR CERTIFICATION FOR LOS ESTEROS CRITICAL ENERGY FACILITY

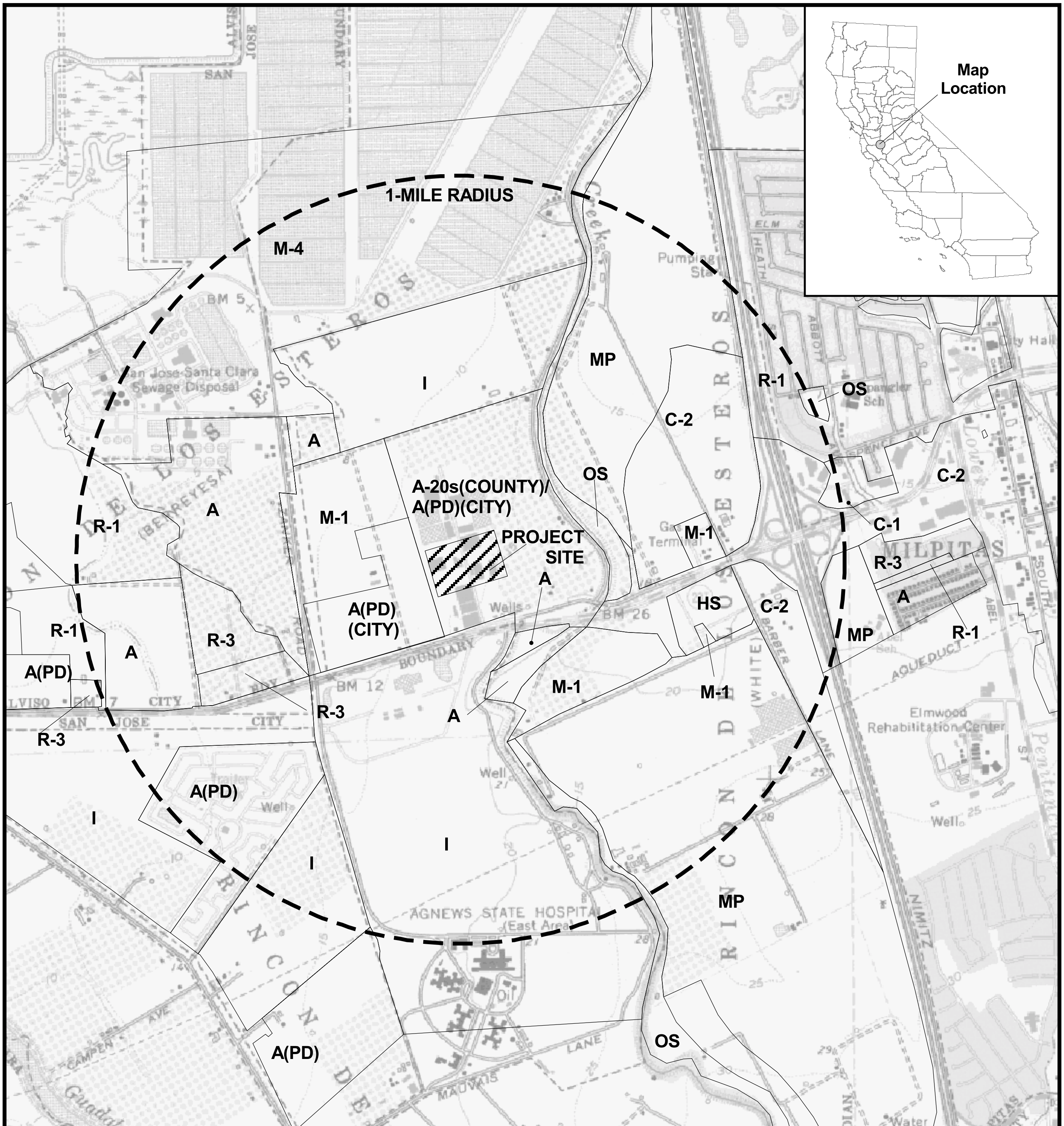
CH2MHILL

CH2M Hill RDD ArcView Project File \\Thor\Cart1\rddgis\san_jose\sanjose.apr 2:47 p.m. 08-2-2001

Source: City of San Jose General Plan (1994), as amended, Milpitas General Plan (1994), as amended, and County of Santa Clara General Plan (1994)

FIGURE 8.4-2
GENERAL PLAN LAND USE DESIGNATIONS FOR PROJECT AND VICINITY
APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

CH2MHILL



SOURCE: CITY OF SAN JOSE ZONING ORDINANCE (2001),
CITY OF MILPITAS ZONING ORDINANCE (1999),
COUNTY OF SANTA CLARA ZONING ORDINANCE (1998)

LEGEND

A	AGRICULTURE
A(PD)	PLANNED DEVELOPMENT
A-20	AGRICULTURAL, 20 ACRE MINIMUM (COUNTY)
C-1	NEIGHBORHOOD COMMERCIAL
C-2	GENERAL COMMERCIAL
HS	HIGHWAY SERVICES
I	INDUSTRIAL
M-1	LIGHT INDUSTRIAL
M-4	MANUFACTURING
OS	OPEN SPACE
R-1	SINGLE FAMILY RESIDENTIAL
R-3	MULTI-FAMILY

N

1000 0 1000 Feet

SCALE IS APPROXIMATE

FIGURE 8.4-3
ZONING DESIGNATIONS FOR PROJECT AND VICINITY

APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

CH2MHILL

CH2M Hill SAC ArcView Project File \\Yosemite\proj\164512\rddgis\san_jose\sanjose_mw.apr 11:02 p.m. 08-01-2001

8.5 Noise

The proposed project by c*Power is a modification of the approved U.S. Dataport / Central Reliability Energy Center (CREC). The CREC facility was under the 50 MW threshold, thus not requiring approval by the California Energy Commission; therefore, the City of San Jose was the lead agency under CEQA and authored the U.S. Dataport Planned Development Zoning Environmental Impact Report. This was approved by the City of San Jose on April 3, 2001 (Ordinance No. 26343 and Resolution No. 70259).

This AFC section will re-present all of the information from the Draft EIR / Final EIR in the standard AFC format and determine if the proposed changes to project approved in the EIR are either less than previously accepted, the same as previously accepted, or if greater impacts are associated with the proposed project modification, then they are mitigated to previously accepted level.

8.5.1 Fundamentals of Acoustics

Acoustics is the study of sound and noise is defined as unwanted sound. Airborne sound is a rapid fluctuation or oscillation of air pressure above and below atmospheric pressure creating a sound wave. Acoustical terms used in this subsection are summarized in Table 8.5-1.

TABLE 8.5-1
Definitions of Acoustical Terms

Term	Definitions
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise or sound at a given location.
Intrusive	Noise that intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, time of occurrence, tonal content, the prevailing ambient noise level as well as the sensitivity of the receiver.
Decibel (dB)	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure sound pressure, which is 20 micropascals (20 micronewtons per square meter).
A-Weighted Sound Level (dBA)	The sound level in decibels as measured on a sound level meter using the A-weighted filter network. The A-weighted filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise. All sound levels in this report are A-weighted.
Equivalent Noise Level (Leq)	The average A-weighted noise level, on an equal energy basis, during the measurement period.
Percentile Noise Level (Ln)	The noise level exceeded during n % of the measurement period, where n is a number between 0 and 100 (e.g., L90)
Day-Night Noise Level (Ldn or DNL)	The average A-weighted noise level during a 24-hour day, obtained after addition of 10 decibels from 10:00 p.m. to 7:00 a.m.

The most common metric is the overall A-weighted sound level measurement that has been adopted by regulatory bodies worldwide. The A-weighting network measures sound in a similar fashion to how a persons perceives or hears sound, thus achieving very good correlation in terms of how to evaluate acceptable and unacceptable sound levels. Other metrics include equivalent sound pressure level (L_{eq}), which is defined as the average noise level, on an equal energy basis, for a stated period of time, and statistical methods that capture the dynamics of a changing acoustical environment. Statistical measurements are typically denoted by L_{xx} where xx represents the percentile of time the sound level is exceeded.

The equivalent sound pressure level (L_{eq}) is defined as the average noise level, on an equal energy basis, for a stated period of time (e.g., hourly). This is commonly used to measure steady state sound or noise that is usually dominant.

In practice, the level of a sound source is conveniently measured using a sound level meter that includes an electrical filter corresponding to the A-weighted curve. The sound level meter also performs the calculations required to determine the L_{eq} for the measurement period. The L_{90} is a measurement that represents the noise level that is exceeded during 90 percent of the measurement period. Similarly, the L_{10} represents the noise level exceeded for 10 percent of the measurement period.

Another metric used in determining the impact of environmental noise is the differences in response people have to daytime and nighttime noise levels. During the nighttime, exterior background noises are generally lower than the daytime levels. However, most household noise also decreases at night and exterior noise becomes more noticeable. Furthermore, most people sleep at night and are sensitive to noise intrusion. To account for human sensitivity to nighttime noise levels, the Day-Night Sound Level (L_{dn} or DNL) was developed. DNL is a noise index that accounts for the greater annoyance of noise during the nighttime hours. DNL values are calculated by averaging hourly L_{eq} sound levels for a 24-hour period, and apply a weighting factor to nighttime L_{eq} values. The weighting factor, which reflects the increased sensitivity to noise during nighttime hours, is added to each hourly L_{eq} sound level before the 24-hour DNL is calculated. For the purposes of assessing noise, the 24-hour day is divided into 2 time periods, with the following weightings:

- Daytime: 7 a.m. - 10 p.m. (15 hours) Weighting factor of 0 dB
- Nighttime: 10 p.m. - 7 a.m. (9 hours) Weighting factor of 10 dB

The two time periods are then averaged to compute the overall DNL value. For a continuous noise source, the DNL value is easily computed by adding 6.4 dB to the overall 24 hour noise level (L_{eq}). For example, if the expected continuous noise level from the Facility was 60.0 dBA, the resulting DNL from the plant would be 66.4 dBA.

The effects of noise on people can be listed in three general categories:

- Subjective effects of annoyance, nuisance, dissatisfaction
- Interference with activities such as speech, sleep, learning
- Physiological effects such as startling and hearing loss

In most cases, environmental noise produces effects in the first two categories only. However, workers in industrial plants typically experience noise effects in the last category.

No completely satisfactory way exists to measure the subjective effects of noise, or to measure the corresponding reactions of annoyance and dissatisfaction. This lack of a common standard is primarily due to the wide variation in individual thresholds of annoyance and habituation to noise. Thus, an important way of determining a person's subjective reaction to a new noise is by comparing it to the existing or “ambient” environment to which that person has adapted. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged by the listeners.

With regard to increases in A-weighted noise level, knowledge of the following relationships will be helpful in understanding this subsection:

- Except in carefully controlled laboratory experiments, the human ear cannot perceive a change of 1 dB.
- Outside the laboratory, a 3 dB(A) change is considered a just-perceivable difference.
- A change in level of at least 5 dB(A) is required before a change in community response would be expected.
- A 10 dB(A) change is subjectively heard as approximately a doubling in loudness, and would almost certainly cause an adverse community response.

Table 8.5-2 shows the relative A-weighted noise levels of common sounds measured in the environment and in industry for various sound levels (Beranek, 1988).

TABLE 8.5-2
Typical Sound Levels Measured in the Environment and Industry

Noise Source At a Given Distance	A-Weighted Sound Level in Decibels	Noise Environments	Subjective Impression
	140		
Civil Defense Siren (100 ft)	130		
Jet Takeoff (200 ft)	120		Pain Threshold
	110	Rock Music Concert	
Pile Driver (50 ft)	100		Very Loud
Ambulance Siren (100 ft)			
	90	Boiler Room	
Freight Cars (50 ft)		Printing Press Plant	
Pneumatic Drill (50 ft)	80	In Kitchen With Garbage Disposal Running	
Freeway (100 ft)			
	70		Moderately Loud
Vacuum Cleaner (10 ft)	60	Data Processing Center	

TABLE 8.5-2
Typical Sound Levels Measured in the Environment and Industry

Noise Source At a Given Distance	A-Weighted Sound Level in Decibels	Noise Environments	Subjective Impression
Department Store			
Light Traffic (100 ft)	50	Private Business Office	
Large Transformer (200 ft)			
	40		Quiet
Soft Whisper (5 ft)	30	Quiet Bedroom	
	20	Recording Studio	
	10		Hearing Threshold

8.5.2 Affected Environment

The LECEF project will occupy approximately 15 acres of the 55-acre parcel. The site is bordered by State Route 237 (SR 237) to the south, the Coyote Creek flood-control channel to the east, the San Jose / Santa Clara Water Pollution Control Plant (WPCP) buffer land and sludge ponds to the north, and WPCP buffer land adjacent to Zanker Road to the west. The proposed project is located near, but not adjacent to the Coyote Creek riparian corridor.

Potential receptors to the south, across SR 237, are two industrial sites (KLA Tencor and Quantum) and the Valley Transit Authority (VTA) bus yard. To the southwest a small research and development park and a mobile home park present the closest residential receptors to the LECEF facility. To the east is Coyote Creek and an agricultural area zoned for future commercial development.

In addition to the above land uses, several trails exist, or are planned, near the project site. These trails are acknowledged in the Alviso Master Plan, the San Jose 2020 General Plan, and the County of Santa Clara's Trails Master Plan. In most cases, these trails are intended to be used by both pedestrians and bicyclists. To the north, bordering the WPCP sludge drying ponds and buffer lands, the San Francisco Bay Trail is planned. To the east, the Coyote Creek / Llagas Creek Trail is planned along the Coyote Creek levee.

8.5.2.1 Ambient Noise Survey Methodology

Ambient noise level measurements were conducted using Bruel & Kjaer 2236 and Bruel & Kjaer 2231 (both type I, precision) sound level meters on Monday, July 10 through Thursday, July 13, 2000. Continuous noise levels were recorded with the Bruel & Kjaer 2236 meters at four locations labeled M1 through M4 in Figure 8.5-1. The continuous noise level data were recorded in terms of L_{eq}, L_{10} and L_{90} in 10-minute intervals. Hourly values were calculated from the 10-minute data. The hourly and 10-minute data is attached in Appendix 8.5-1.

In addition, several 10-minute measurements were collected with the Bruel & Kjaer 2231 at M5 and M6 which are also shown in Figure 8.5-1. These short-term measurements were taken in terms of L_1, L_{10}, L_{50}, L_{90}, L_{99} and L_{eq} at each location. For all locations, data were collected during nighttime hours (10 pm to 7 am) to gain a representative sample at times when ambient noise levels would be the lowest.

Table 8.5-3, below, summarizes the monitoring locations, type of monitoring and dominant noise sources.

TABLE 8.5-3
Monitoring Location and Description

Map ID	Description	Continuous or Short-Term Measurements	Dominant Noise Sources
M1	Southern property line – bordering SR 237	Continuous	Traffic, Aircraft
M2	East of project property line – bordering the Coyote Creek riparian corridor	Continuous	Traffic, Rustling Trees, Aircraft
M3	Northern property line – bordering the WPCP sludge drying ponds	Continuous	Traffic, Rustling Trees, Aircraft
M4	Western property line - west of Zanker Road – near the receiving entrance for the WPCP and across from the WPCP pump station	Continuous	Traffic, Rustling Trees, WPCP Pump Station, Aircraft
M5	Southwest of the CREC facility – the northern most edge of the mobile home park	Short-Term	Traffic, Aircraft
M6	South of the CREC facility – Industrial Property (KLA Tencor and Quantum)	Short-Term	Traffic, Aircraft

8.5.2.2 Noise Survey Results

The existing DNL at locations M1 through M4 were calculated directly from the measured L_{eq} data and are summarized in Table 8.5-4 below. Figures 8.5-2 through 8.5-5 and Tables 8.5-5 through 8.5-8 summarize the hourly measurements and DNL calculations for locations M1 through M4. Table 8.5-9 summarizes the short term spot measurements at M5 and M6.

TABLE 8.5-4
Summary of DNLs at M1 through M4

Monitoring Locations	DNL
M1	69
M2	59
M3	58
M4	69[1]

[1] An 18-hour measurement was conducted at M4 (only the period from 7 PM to 1 PM was captured). Reported DNL value was calculated assuming the lowest hourly L_{eq} (60) for the missing hours (2 PM to 6 PM). Actual DNL may be slightly higher.

TABLE 8.5-5
Hourly Values and L_{DN} Calculations at M1
Monday July 10 through Tuesday July 11, 2000

Hour Ending	Time Period	L_{eq}	L_{dn} Penalty	L_{eq} Penalty
1:02 PM	Day	65	0	65
2:02 PM	Day	64	0	64
3:02 PM	Day	63	0	63
4:02 PM	Day	64	0	64
5:02 PM	Day	63	0	63
6:02 PM	Day	63	0	63
7:02 PM	Day	63	0	63
8:02 PM	Day	63	0	63
9:02 PM	Day	62	0	62
10:02 PM	Day	62	0	62
11:02 PM	Night	62	10	72
12:02 AM	Night	60	10	70
1:02 AM	Night	58	10	68
2:02 AM	Night	56	10	66
3:02 AM	Night	55	10	65
4:02 AM	Night	58	10	68
5:02 AM	Night	63	10	73
6:02 AM	Night	67	10	77
7:02 AM	Night	63	10	73
8:02 AM	Day	61	0	61
9:02 AM	Day	60	0	60
10:02 AM	Day	61	0	61
11:02 AM	Day	67	0	67
12:02 PM	Day	66	0	66
			L_{dn}	**68.5**

TABLE 8.5-6
Hourly Values and L_{DN} Calculations at M2

Monday July 10 through Tuesday July 11, 2000				
Hour Ending	**Time Period**	L_{eq}	L_{dn} **Penalty**	L_{eq} **+ Penalty**
1:02 PM	Day	54	0	54
2:02 PM	Day	54	0	54
3:02 PM	Day	55	0	55
4:02 PM	Day	59	0	59
5:02 PM	Day	57	0	57

TABLE 8.5-6
Hourly Values and L_{DN} Calculations at M2

Monday July 10 through Tuesday July 11, 2000				
Hour Ending	**Time Period**	**L_{eq}**	**L_{dn} Penalty**	**L_{eq} + Penalty**
6:02 PM	Day	59	0	59
7:02 PM	Day	58	0	58
8:02 PM	Day	60	0	60
9:02 PM	Day	56	0	56
10:02 PM	Day	52	0	52
11:02 PM	Night	59	10	69
12:02 AM	Night	49	10	59
1:02 AM	Night	40	10	50
2:02 AM	Night	39	10	49
3:02 AM	Night	39	10	49
4:02 AM	Night	40	10	50
5:02 AM	Night	44	10	54
6:02 AM	Night	47	10	57
7:02 AM	Night	47	10	57
8:02 AM	Day	47	0	47
9:02 AM	Day	45	0	45
10:02 AM	Day	55	0	55
11:02 AM	Day	63	0	63
12:02 PM	Day	59	0	59
			L_{dn}	**59.1**

TABLE 8.5-7
Hourly Values and L_{DN} Calculations at M3

Tuesday, July 11th though Wednesday July 12, 2000					Tuesday, July 11th though Wednesday July 12, 2000				
Hour Ending	**Time Period**	**L_{eq}**	**L_{dn} Penalty**	**L_{eq} + Penalty**	**Hour Ending**	**Time Period**	**L_{eq}**	**L_{dn} Penalty**	**L_{eq} + Penalty**
3:00 PM	Day	56	0	56	7:00 PM	Day	57	0	57
4:00 PM	Day	59	0	59	8:00 PM	Day	60	0	60
5:00 PM	Day	59	0	59	9:00 PM	Day	53	0	53
6:00 PM	Day	59	0	59	10:00 PM	Day	49	0	49
7:00 PM	Day	57	0	57	11:00 PM	Night	56	10	66
8:00 PM	Day	60	0	60	12:00 AM	Night	38	10	48
9:00 PM	Day	53	0	53	1:00 AM	Night	37	10	47
10:00 PM	Day	49	0	49	2:00 AM	Night	43	10	53
11:00 PM	Night	56	10	66	3:00 AM	Night	42	10	52
12:00 AM	Night	38	10	48	4:00 AM	Night	42	10	52
1:00 AM	Night	37	10	47	5:00 AM	Night	48	10	58
2:00 AM	Night	43	10	53	6:00 AM	Night	52	10	62

TABLE 8.5-7
Hourly Values and L_{DN} Calculations at M3

Tuesday, July 11th though Wednesday July 12, 2000					Tuesday, July 11th though Wednesday July 12, 2000				
Hour Ending	**Time Period**	**L_{eq}**	**L_{dn} Penalty**	**L_{eq} + Penalty**	**Hour Ending**	**Time Period**	**L_{eq}**	**L_{dn} Penalty**	**L_{eq} + Penalty**
3:00 AM	Night	42	10	52	7:00 AM	Night	52	10	62
4:00 AM	Night	42	10	52	8:00 AM	Day	50	0	50
5:00 AM	Night	48	10	58	9:00 AM	Day	52	0	52
6:00 AM	Night	52	10	62	10:00 AM	Day	51	0	51
7:00 AM	Night	52	10	62	11:00 AM	Day	47	0	47
8:00 AM	Day	50	0	50	12:00 PM	Day	45	0	45
9:00 AM	Day	52	0	52	1:00 PM	Day	54	0	54
10:00 AM	Day	51	0	51	2:00 PM	Day	55	0	55
11:00 AM	Day	47	0	47	3:00 PM	Day	57	0	57
12:00 PM	Day	45	0	45	4:00 PM	Day	61	0	61
1:00 PM	Day	54	0	54	5:00 PM	Day	59	0	59
2:00 PM	Day	55	0	55	6:00 PM	Day	59	0	59
			L_{dn}	**57.9**				**L_{dn}**	**58.0**

TABLE 8.5-8
Hourly Values and L_{DN} Calculations at M4

Wednesday July 12 through Thursday July 13, 2000				
Hour Ending	**Time Period**	**L_{eq}**	**L_{dn} Penalty**	**L_{eq} + Penalty**
8:00 PM	Day	63	0	63
9:00 PM	Day	60	0	60
10:00 PM	Day	59	0	59
11:00 PM	Night	60	10	70
12:00 AM	Night	61	10	71
1:00 AM	Night	62	10	72
2:00 AM	Night	63	10	73
3:00 AM	Night	62	10	72
4:00 AM	Night	60	10	70
5:00 AM	Night	61	10	71
6:00 AM	Night	64	10	74
7:00 AM	Night	64	10	74
8:00 AM	Day	65	0	65
9:00 AM	Day	64	0	64
10:00 AM	Day	64	0	64

TABLE 8.5-8
Hourly Values and L_{DN} Calculations at M4

Wednesday July 12 through Thursday July 13, 2000				
Hour Ending	**Time Period**	**L_{eq}**	**L_{dn} Penalty**	**L_{eq} + Penalty**
11:00 AM	Day	65	0	65
12:00 PM	Day	64	0	64
1:00 PM	Day	64	0	64
2:00 PM	Day			60
3:00 PM	Day			60
4:00 PM	Day			60
5:00 PM	Day			60
6:00 PM	Day			60
7:00 PM	Day			60
			L_{dn}	**68.5**

Note: 1. An 18-hour measurement was conducted at M4 (only the period from 7 PM to 1 PM was captured). Reported DNL value was calculated assuming the lowest hourly L_{eq} (60) for the missing hours (2 PM to 6 PM). Actual DNL may be slightly higher.

8.5.3 Laws, Ordinances, Regulations, and Standards

The following are the applicable regulations that apply to noise generated by the Proposed project.

8.5.3.1 Local

The California State Planning Law (California Government Code Section 65302) requires that all cities, counties and entities (such as multi-city port authorities) prepare and adopt a General Plan to guide community change. Both the local city and county General Plans contain noise provisions.

The project site is located in the City of San Jose; therefore, the County of Santa Clara's regulations do not apply and have not been included. A summary of applicable local regulations and the project specific standards set forth in the EIR are presented in Table 8.5-10.

City of San Jose

General Plan

The Noise Element of the City of San Jose 2020 General Plan (1994) contains noise guidelines for various land uses within the City and identifies acceptable noise levels for those uses in terms of the Day-Night Level (L_{dn} or DNL). The General Plan's guidelines identify an DNL of 45 dBA as an acceptable interior noise level for virtually all land uses, including residential, office, and industrial.

TABLE 8.5-9
Summary of 10-Minute Measurements at M5 and M6

Map ID	Description	Date	Start	Stop	L_1	L_{10}	L_{50}	L_{90}	L_{99}	L_{eq}
M5	Mobile Home Park	7/10/2000	22:18	22:28	74.0	61.0	53.0	51.0	50.0	61.1
		7/10/2000	22:30	22:40	56.5	55.0	53.5	51.0	50.0	53.4
		7/10/2000	22:42	22:52	60.5	58.0	51.0	49.5	48.5	53.8
		7/10/2000	23:50	0:00	58.0	53.0	50.0	47.5	46.0	50.9
		7/11/2000	0:02	0:12	54.5	52.5	49.5	47.0	45.5	50.1
								Average L_{eq}		**56.0**
M6	KLA Tencor	7/10/200	23:05	23:15	61.0	52.0	49.5	48.5	48.0	51.6
		7/10/2000	23:17	23:27	66.5	58.5	49.0	47.5	47.0	54.9
		7/10/2000	23:29	23:39	64.0	50.0	48.0	47.0	46.5	51.4
								Average L_{eq}		**52.9**

TABLE 8.5-10
Summary of Applicable Local Noise Regulations & Project Specific Standards

Regulatory Body	General Standard	Project Specific Standard Set in EIR
City of San Jose		
2020 General Plan	Interior noise level of 45 L_{dn} Exterior noise level of 60 L_{dn} for public, quasi-public, residential, recreation, and commercial land uses Exterior noise level of 70 L_{dn} for industrial land uses Exterior noise level of 76 L_{dn} for agricultural, vacant urban, and open land	Exterior noise level of 60 L_{dn} along the eastern property line bordering Coyote Creek (designated Parks & Open Space) Exterior noise level of up to 76 L_{dn} along the northern property line bordering the WPCP sludge ponds (designated Industrial or Open Land) Exterior noise level of 70 L_{dn} at the industrial development to the south. Exterior noise level of 76 L_{dn} at the WPCP buffer lands to the west, the area immediately adjacent to the facility is allowed to exceed this level.
Alviso Master Plan	Industrial/Non-industrial Relationships Objective: Potential environmental impacts of industrial activities must be mitigated so as not to harm natural resources Industrial/Non-industrial Relationships Policy 3: Industrial uses should be sited to avoid creating nuisances and should be as far away from sensitive uses as possible.	
Riparian Corridor Policy Study Guidelines	Guideline 1A- Orient noise sources toward non-riparian property edges. Guideline 2F– The operation of mechanical equipment within or adjacent to riparian corridors should not exceed noise levels for open space as specified in the Noise Element of the City of San Jose's General Plan [60 L_{dn}] or exceed background noise levels. Locate noise sources as far as necessary from riparian corridors to preclude exceeding the ambient noise level in the corridors.	Establishes guidelines to include maintaining noise levels at 60 L_{dn} at the property line adjacent to park uses of the Coyote Creek Park Chain and maintaining ambient noise levels in the riparian corridor. For the purposes of this analysis, a substantial increase in ambient noise levels would be considered 3 dBA DNL or more.

The General Plan also establishes a long-term outdoor noise goal of DNL 55 dBA. Because of the existing noise levels in San Jose, the City has established a short-term outdoor guideline of DNL 60 dBA, which is considered to be more realistic. A DNL of 76 dBA is established as the maximum exterior noise level allowable to avoid significant adverse health effects. The General Plan calls for commercial, industrial, and other non-residential land uses located adjacent to noise sensitive residential and public/quasi-public land uses (e.g., schools, hospitals, libraries, auditoriums) to mitigate noise generation to meet the DNL 55 dBA noise level at the project property line. No such sensitive land uses exist within DNL 55 dBA contour of the facility.

The "Land Use Compatibility Guidelines for Community Noise in San Jose" are established in Figure 16 (page 111) of the City's Noise Element (2020 General Plan, 1994). An exterior noise level of DNL 60 dBA is considered "satisfactory" for public, quasi-public, residential, recreation, and commercial land uses. Up to DNL 70 dBA is considered "satisfactory" for industrial land uses.

When new development exceeds "satisfactory" levels and requires a full EIR, the General Plan states that an acoustical analysis should be made indicating the amount of attenuation necessary to maintain an indoor level less than DNL 45 dBA and that onsite outdoor activity be limited to acoustically protected areas. Furthermore, it states that existing uses should receive remedial sound attenuation treatment.

Based on the City of San Jose's General Plan, the EIR established the following standards:

- Exterior noise level of DNL 60 dBA along the eastern property line bordering Coyote Creek (designated Parks & Open Space)
- Exterior noise level of up to DNL 76 dBA along the northern property line bordering the WPCP sludge ponds (designated Industrial or Open Land)
- Exterior noise level of DNL 70 dBA at the industrial development to the south.
- Exterior noise level of DNL 76 dBA at the WPCP buffer lands to the west, the area immediately adjacent to the facility is allowed to exceed this level.

Riparian Corridor Policy

The City of San Jose's "Riparian Corridor Policy Study" (revised 1999) establishes several guidelines that should limit noise impacts to the riparian corridor. Guideline 1A-Orientation, states that noise generating activities and equipment should be oriented toward non-riparian property edges. Guideline 2F–Noise, states that, "The operation of mechanical equipment within or adjacent to riparian corridors (e.g., compressors, street/parking area sweepers) should not exceed noise levels for open space as specified in the Noise Element of the City of San Jose's General Plan (up to DNL 60 dBA is specified as 'satisfactory' for parks and playgrounds in the General Plan) or exceed background noise levels. Noise producing stationary mechanical equipment should be located as far as necessary from riparian corridors to preclude exceeding the ambient noise level in the corridors."

The EIR established the following guidelines for compliance with the Riparian Corridor Policy Study:

- Maintaining noise levels at DNL 60 dBA at the property line adjacent to park uses of the Coyote Creek Park Chain and maintaining ambient noise levels in the riparian corridor. For the purposes of this analysis, a substantial increase in ambient noise levels would be considered 3 dBA DNL or more.

Alviso Master Plan

Industrial/Non-Industrial Relationships Objective. The Alviso Master Plan (1998) indicates that industrial facilities should have an adequate setback so that environmental resources, such as Coyote Creek, are protected from potential negative impacts of industrial use. The objective is to mitigate potential impacts from new industrial facilities so as not to harm nearby natural resources.

Industrial/Non-Industrial Relationships Policy 3. This policy states that industrial uses located adjacent to sensitive uses, such as Coyote Creek, should be located such that they avoid creating nuisances and/or hazards for the sensitive use. It also states that activities that generate noise, dust, traffic, or have nuisance or safety effects should be located as far from the sensitive uses as possible. The objective of this policy is to protect sensitive uses from potentially adverse impacts from neighboring industrial uses.

8.5.3.2 State of California

CEQA

Appendix G of the California Environmental Quality Act (CEQA) Guidelines states that a project would normally be considered to have a significant impact if the project results in:

- Exposure of persons to, or generation of, noise levels in excess of standards established in the local general plan or noise ordinances or applicable standards of other agencies
- Exposure of persons to, or generation of, excessive ground-borne vibration or ground-borne noise levels
- A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project
- A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project

The EIR established that a 3-dBA increase in the DNL as a result of the project would be considered a substantial increase in ambient noise levels and, therefore, represents a significant impact.

Cal-OSHA

The California Department of Industrial Relations, Division of Occupational Safety and Health enforces California Occupational Safety and Health Administration (Cal-OSHA) regulations, which are the same as the federal OSHA regulations described below. The regulations are contained in 8 California Code of Regulations (CCR), General Industrial Safety Orders, Article 105, Control of Noise Exposure, Sections 5095, et seq.

California Vehicle Code

Noise limits for highway vehicles are regulated under the California Vehicle Code, Sections 23130 and 23130.5. The limits are enforceable on the highways by the California Highway Patrol and the County Sheriff's Office.

8.5.3.3 Federal

USEPA

The federal government has no standards or regulations applicable to offsite noise levels from the project. However, guidelines are available from the USEPA (1974) to assist state and local government entities in development of state and local LORS for noise. The recommended level for protection against activity interference and annoyance at rural residences is a DNL level of 55 dBA. This is equivalent to a continuous noise level of 49 dBA. The project noise level will comply with the USEPA guideline level at the nearest residence.

OSHA

Onsite noise levels are regulated, in a sense, through the Occupational Health and Safety Act of 1970 (OSHA). The noise exposure level of workers is regulated at 90 dBA, over an 8-hour work shift to protect hearing (29 Code of Federal Regulations [CFR] 1910.95). Onsite noise levels will generally be in the 70 to 85 dBA range. Areas above 85 dBA will be posted as high noise level areas and hearing protection will be required. The Facility will implement a hearing conservation program for applicable employees and maintain exposure levels below 90 dBA.

A summary of these various LORS is presented in Table 8.5-11.

TABLE 8.5-11
Applicable Laws, Ordinances, Regulations, and Standards

LORS	Applicability	Conformance (Sec. No.)
Federal Offsite: USEPA	Guidelines for state and local governments.	Not Applicable
Federal Onsite: OSHA	Exposure of workers over 8-hour shift limited to 90 dBA.	Section 8.5.3.3. Also see Worker Safety section of AFC.
State-Onsite: Cal/OSHA 8 CCR Article 105 Sections 095 et seq.	Exposure of workers over 8-hour shift limited to 90 dBA.	Section 8.5.3.2. Also see Worker Safety section of AFC.
State-Offsite: Calif. Vehicle Code Sections 23130 and 23130.5	Regulates vehicle noise limits on California highways.	Delivery trucks and other vehicles will meet Code requirements.
Local California Government Code Section 65302	Requires local government to prepare plans which contain noise provisions.	City of San Jose conforms
City of San Jose General Plan	Establishes noise guideline based on land use compatibility.	Section 8.5.3.1
Alviso Master Plan	Establishes Industrial/Non-Industrial Relationships	Section 8.5.3.1

Permits Required and Permit Schedule

No permits are required; therefore, there is no permit schedule.

8.5.4 Environmental Consequences

Noise will be produced at the site during both the construction and operation phases of the project. Potential noise impacts from both activities are assessed in this section.

8.5.4.1 Operational Noise

A noise model of the proposed project has been developed using source input levels derived from field surveys of similar equipment. The noise emission from the plant, expressed as DNLs, have been calculated and mapped over the site and the surrounding area as shown in Figure 8.5-6. The actual sound pressure level that would be measured at any point would be approximately 6-dBA lower than the DNL value, these levels are shown in Figure 8.5-7. The noise levels presented represent the anticipated steady state level from the plant with essentially all equipment operating and are exclusive of any pre-existing background noise.

The model divides the proposed project into a list of individual point noise sources representing each piece of equipment that produces a significant amount of noise. The A-weighted sound power levels representing the standard performance of each of these components are assigned based either on first-hand field measurements of similar equipment made at a number of existing plants, or on data supplied by manufacturers. Using these standard power levels as a basis, the model calculates the sound pressure level that would occur at each receptor from each source after losses from distance, air absorption, blockages, etc. are considered. The sum of all these individual levels is the total plant level at the modeling point

The sound propagation factors used in the model have been adapted from the *Electric Power Plant Environmental Noise Guide* published by the Edison Electric Institute (Miller et al., 1978), ISO 9613-2 *Acoustics - Sound Attenuation During Propagation Outdoors* and VDI 2714 - Outdoor Sound Propagation. Safety factors based on field experience have generally been added to the propagation loss values predicted in the above sources.

Table 8.5-12 below summarizes the plant level in DNL and dBA at monitoring locations M1 through M6.

TABLE 8.5-12
Predicted Plant Noise Levels (DNL and dBA) at M1 through M6

Receptor	Plant Level (DNL)	Plant Level (dBA)
M1	58	52
M2	54	48
M3	52	46
M4	48	42
M5	45	39
M6	52	46

8.5.5 Mitigation Measures

The following mitigation measures are proposed and are included in the plant model. The noise reductions resulting from these modifications are reflected in Figures 8.5-6 and 8.5-7.

- SCR Stacks –silencers installed in the stacks to limit stack emissions to Lw 95 dB(A).
- East Side Transformers – A barrier wall is installed across the east face of the transformers. This wall will extend at least one-meter beyond the cross area of the transformer.
- Inlet Duct – an absorptive barrier wall extending up from the top of the turbine enclosure to the bottom of the filter house. This will reduce or eliminate the tonal breakout noise from the inlet duct. On the east units the wall will wrap around the east end having an opening only for the generator exhaust vent. On the west units the wall will wrap around and block the east end of the inlet duct and turbine enclosure vent fans.
- Skids (Mechanical Ancillary Equipment Packages) – All equipment skids to be low noise units; generally, limited to Lw 98 dB(A).
- Gas Compressor Station – An enclosure system or low noise skids that limit the emissions to Lw 86 dB(A) each.
- Gas Metering Station – A barrier wall at least 8 feet high around metering / pressure regulating valves and equipment. 24 gauge architectural siding or equal.
- Chiller Skid - An enclosure system or low noise skids that limit the emissions to Lw 95 dB(A)each.
- Cooling Tower – low speed operation only.
- Turbine Exhaust Ducts – a barrier wall between the turbine enclosure and HRSG inlet duct as high as the turbine enclosure.

8.5.6 Cumulative Levels

The cumulative noise levels are calculated by adding the predicted plant noise levels presented in Table 8.5-12 to the existing (or ambient) noise level. Tables 8.5-13 and 8.5-14 summarize the cumulative noise levels.

Where existing DNL measurements were available (M1 through M4), comparisons were made on a DNL basis. When existing DNL measurements were not available (M5 and M6), comparisons were made based on the average L_{eq}. Note that this is an extremely conservative approach given the fact that measurements at M5 and M6 were conducted at night, when traffic noise is substantially less. Given the level of traffic noise in the project area, the existing DNL at M5 and M6 is likely to be 10 dBA higher than the average nighttime L_{eq} calculated.

TABLE 8.5-13
Cumulative Environmental Noise Levels (DNL) – M1 through M4

Receptor	Existing Level (DNL)	Plant Level (DNL)	Cumulative Level (DNL)	Cumulative Increase (DNL)
M1	69	58	70	1
M2	59	54	60	1
M3	58	52	59	1
M4	69	48	69	0

TABLE 8.5-14
Cumulative Environmental Noise Levels (dBA) – M5 and M6

Receptor	Existing Level (dBA) 10 PM to Midnight[1]	Plant Level (dBA)	Cumulative Level (dBA)	Cumulative Increase (dBA)
M5	56	39	56	0
M6	53	46	54	1

[1] The existing level was estimated by averaging the 10-minute nighttime L_{eq} presented in Table 10. These levels are likely to be substantially lower than the daytime average or the DNL.

Note that along the northern boundary (e.g., the border with the WPCP Sludge Drying Ponds), the approved CREC plant levels would have varied between less than 55 DNL to approximately 63 DNL. The existing level along this boundary is approximately 58 DNL (as measured at M3). This would have resulted in a cumulative levels of up to 64 DNL, a 6-dBA increase over existing levels. The proposed project plant levels vary between less than 49 DNL to 52 DNL. The proposed project results in a cumulative level of up to 59 dBA, only a 1-dBA increase over existing levels. The proposed project's noise impacts along the northern boundary is 5 dBA less than the approved CREC project.

The approved CREC plant levels may have resulted in a 3-dBA increase in DNL along limited areas south of the site, including, but not limited to, portions of the Coyote Creek Riparian Corridor. The proposed project has no such impacts.

The approved CREC project would have resulted in increases in excess of 3 dBA to the west of the facility, on the WPCP buffer lands between Zanker Road and the facility property line. Levels would also exceed the 70-DNL threshold established in the City of San Jose's General Plan for industrial property. However, no sensitive receptors are present nor are they planned. The proposed projects impacts will be dramatically reduced.

As demonstrated in Tables 8.5-13 and 8.5-14, the proposed facility causes a minimal increase in DNL at M1, M2, M3 and M4 and a negligible increase in the average L_{eq} at M5 and M6 between 10 PM and midnight. In all cases, the proposed facilities impacts are much less than the approved CREC impacts. The substantial increases (greater than 3 dBA) that would have been realized along portions of the northern boundary, the proposed alignment of the San Francisco Bay Trail and the potentially substantial increases would have been realized south of the site including a limited portion of the Coyote Creek Riparian Corridor have been avoided by the proposed project.

8.5.6.1 Construction Noise

Construction of the proposed project is expected to be typical of other power plants in terms of schedule, equipment used, and other types of activities. The noise level will vary during the construction period, depending upon the construction phase. Construction of power plants can generally be divided into five phases that use different types of construction equipment. The five phases are: 1) site preparation and excavation; 2) concrete pouring; 3) steel erection; 4) mechanical; and 5) clean-up (Miller et al., 1978).

Both the USEPA Office of Noise Abatement and Control and the Empire State Electric Energy Research Company have extensively studied noise from individual pieces of construction equipment as well as from construction sites of power plants and other types of facilities (USEPA, 1971; Barnes et al., 1976). Since specific information on types, quantities, and operating schedules of construction equipment is not available at this point in project development, information from these documents for similarly sized industrial projects will be used. Use of this data, which is between 21 and 26 years old, is conservative since the evolution of construction equipment has been toward quieter designs as the country becomes more urbanized and the population becomes more aware of the adverse effects of noise.

The loudest equipment types generally operating at a site during each phase of construction are presented in Table 8.5-15. The composite average or equivalent site noise level, representing noise from all equipment, is also presented in the table for each phase.

TABLE 8.5-15
Construction Equipment and Composite Site Noise Levels

Construction Phase	Loudest Construction Equipment	Equipment Noise Level (dBA) at 50 feet (unless noted at 100 ft.)	Composite Site Noise Level (dBA) at 50 feet (unless noted at 100 ft.)
Site Clearing and Excavation	Dump Truck Backhoe	91 85	89
Concrete Pouring	Truck Concrete Mixer	91 85	78
Steel Erection	Derrick Crane Jack Hammer	88 88	87
Mechanical	Derrick Crane Pneumatic Tools	88 86	87
Clean-Up	Rock Drill Truck	98 91	89

Source: USEPA, 1971; Barnes et al., 1976.

Average or equivalent construction noise levels projected to the nearest residences from the site are presented in Table 8.5-16. These results are conservative since the only attenuating mechanism considered was divergence of the sound waves in open air. Average noise levels during the construction activities are projected to be between 57 dBA and 46 dBA. The construction noise may be audible at the nearest residences but will not exceed current exposure levels and the noisiest construction activities will be confined to the daytime hours.

TABLE 8.5-16
Average Construction Noise Levels at Various Receptors (dBA)

Construction Phase	M5 Nearest Residential Receptor Noise Level (approx. 2,500 ft.) (dBA)
Site Clearing and Excavation	57
Concrete Pouring	46
Steel Erection	55
Mechanical	55
Clean-Up	57

Another criterion by which the potential disturbance from construction noise can be judged is to compare the maximum or peak noise levels produced by common pieces of equipment or processes to the existing level of intrusive noise, caused by such things as automobile or large truck traffic on SR 237. The level of intrusive noise engendered by these sporadic events can generally be quantified by the L_{10} statistical measure, or the level that is exceeded only 10 percent of the measurement period. Figures 8.5-3 through 8.5-5 plot the L_{10} at receptors M1 through M4. L_{10} levels at M5 are likely to be less than M1 but greater than M2 given the relative distance of each to SR 237.

Table 8.5-17 lists the typical maximum noise levels associated with common construction equipment at 50 feet and at receptor position M5 (the mobile home park). In most cases these levels are likely below the average daytime L_{10} at receptor M5.

Pile driving noise depends on the method used and, in the case of conventional impact driving, the force of each blow. For average impacts of 20,000 ft-lb or more, the likely noise level at the mobile home park will be approximately 65 dBA. This level is on par with the likely current exposure at M5 given that it is in the flight path of the San Jose International Airport and adjacent to SR 237. An indoor disturbance would not be anticipated.

TABLE 8.5-17
Maximum Noise Levels from Common Construction Equipment and Resultant Receptor Noise Levels

Construction Equipment	Typical Sound Pressure Level at 50 ft. (dBA)	Expected Sound Pressure Level at Receptor M5, 2,500 ft. (dBA)
Pile Drivers (20,000-32,000 ft-lbs./blow)	104	65
Dozer (250-700 hp)	88	49
Front End Loader (6-15 cu. yds.)	88	49
Trucks (200-400 hp)	86	47

TABLE 8.5-17
Maximum Noise Levels from Common Construction Equipment and Resultant Receptor Noise Levels

Construction Equipment	Typical Sound Pressure Level at 50 ft. (dBA)	Expected Sound Pressure Level at Receptor M5, 2,500 ft. (dBA)
Grader (13 to 16 ft. blade)	85	46
Shovels (2-5 cu. yds.)	84	45
Portable Generators (50-200 kW)	84	45
Derrick Crane (11-20 tons)	83	44
Mobile Crane (11-20 tons)	83	44
Concrete Pumps (30-150 cu. yds.)	81	42
Tractor (3/4 to 2 cu. yds.)	80	41
Unquieted Paving Breaker	80	41
Quieted Paving Breaker	73	34

Noise generated during the testing and commissioning phase of the project is not expected to be substantially different from that produced during normal full load operation. Starts and abrupt stops are more frequent during this period, but on the whole they are usually short-lived.

8.5.6.2 Ground and Airborne Vibration

Ground and airborne induced vibration from operation of the proposed project will not affect the local area. The proposed project is primarily driven by gas turbines exhausting into an empty heat recovery steam generator duct (HRSGs), which is contiguous with a selective catalytic reduction (SCR) duct. These very large ducts greatly reduce low frequency noise, which is mainly the source of airborne induced vibration of structures.

The equipment that would be used in the proposed project is well balanced and is designed to produce very low vibration levels throughout the life of the proposed project. An imbalance could contribute to ground vibration levels in the vicinity of the equipment. However, vibration-monitoring systems installed in the equipment are designed to ensure that the equipment remains balanced. Should an imbalance occur, the event would be detected and the machines would automatically shut down.

Construction Vibration

Construction vibrations can be divided into three classes, based on the wave form and its source:

Wave form: Impact.	Example source: impact pile driver or blasting
Wave form: Steady state.	Example source: vibratory pile driver
Wave form: Pseudo steady state	Example source: double acting pile hammer

The pile driver, if it is required to be used for the project would impart a relatively limited energy to the surrounding soil and this activity would occur at a significant distance from neighborhood structures and facilities. Therefore, it is not expected that there will be any significant vibration effect during construction of the proposed project.

Structural Vibration Induced by Airborne

Gas turbines in simple cycle operation commonly produce airborne low frequency noise emissions that are capable of inducing perceptible vibration in nearby structures with lightweight frame construction. Gas turbines that exhaust into HRSGs, on the other hand, rarely, if ever, cause this type of problem. The expansion of the combustion turbine exhaust gases inside the relatively large cavity of the HRSG and the subsequent contraction in the exhaust stack act to dissipate acoustic energy. The ability of HRSGs to attenuate turbine exhaust noise, even when no specific silencing measures are incorporated into the design, is a well-established phenomenon. The proposed project is primarily driven by gas turbines exhausting into an empty heat recovery steam generator duct (HRSGs), which is contiguous with a selective catalytic reduction (SCR) duct. These very large ducts greatly reduce low frequency noise, which is mainly the source of airborne induced vibration of structures. As stated previously, ground and airborne induced vibration from operation of the proposed project will not affect the local area.

8.5.7 Involved Agencies and Agency Contacts

Agency contacts relatives to noise issues are presented in Table 8.5-18.

TABLE 8.5-18
Agency Contacts

Agency	Contact	Telephone
San Jose Dept. of City Planning and Building 801 N. First Street, Rm. 400 San Jose, CA 95110	Laurel Prevetti	(408) 277-4576

8.5.8 References

Acoustics-Attenuation of Sound during Propagation Outdoors, Part 2, A General Method of Calculation, ISO 9613-2, International Organization for Standardization, Geneva. 1989.

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Outdoor Sound Propagation, VDI 2714, VDI (Verein Deutscher Ingenieure) - Verlag GmbH, Dussledorf, 1988

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USEPA. 1974. Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety. 550/9-74-004, Office of Noise Abatement and Control, Washington, DC.

FIGURE 8.5-1
FACILITY NOISE MONITORING LOCATIONS
APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

D072001001RDD_54 (7/30/01)

CH2MHILL

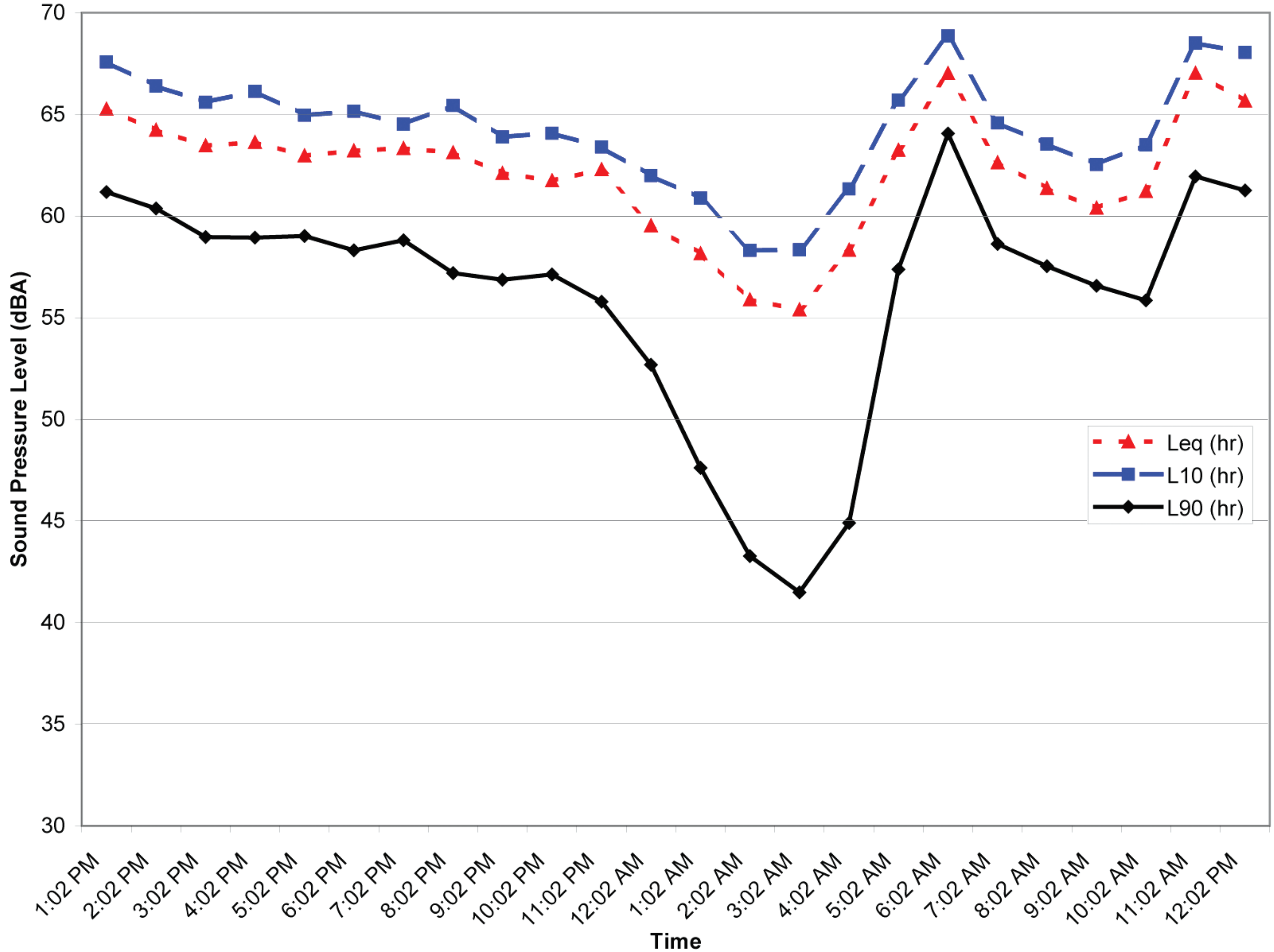

FIGURE 8.5-2
HOURLY VALUES AT M1
(7/10-11/2000)
APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY
CH2MHILL

D072001001RDD_58 (7/30/01)

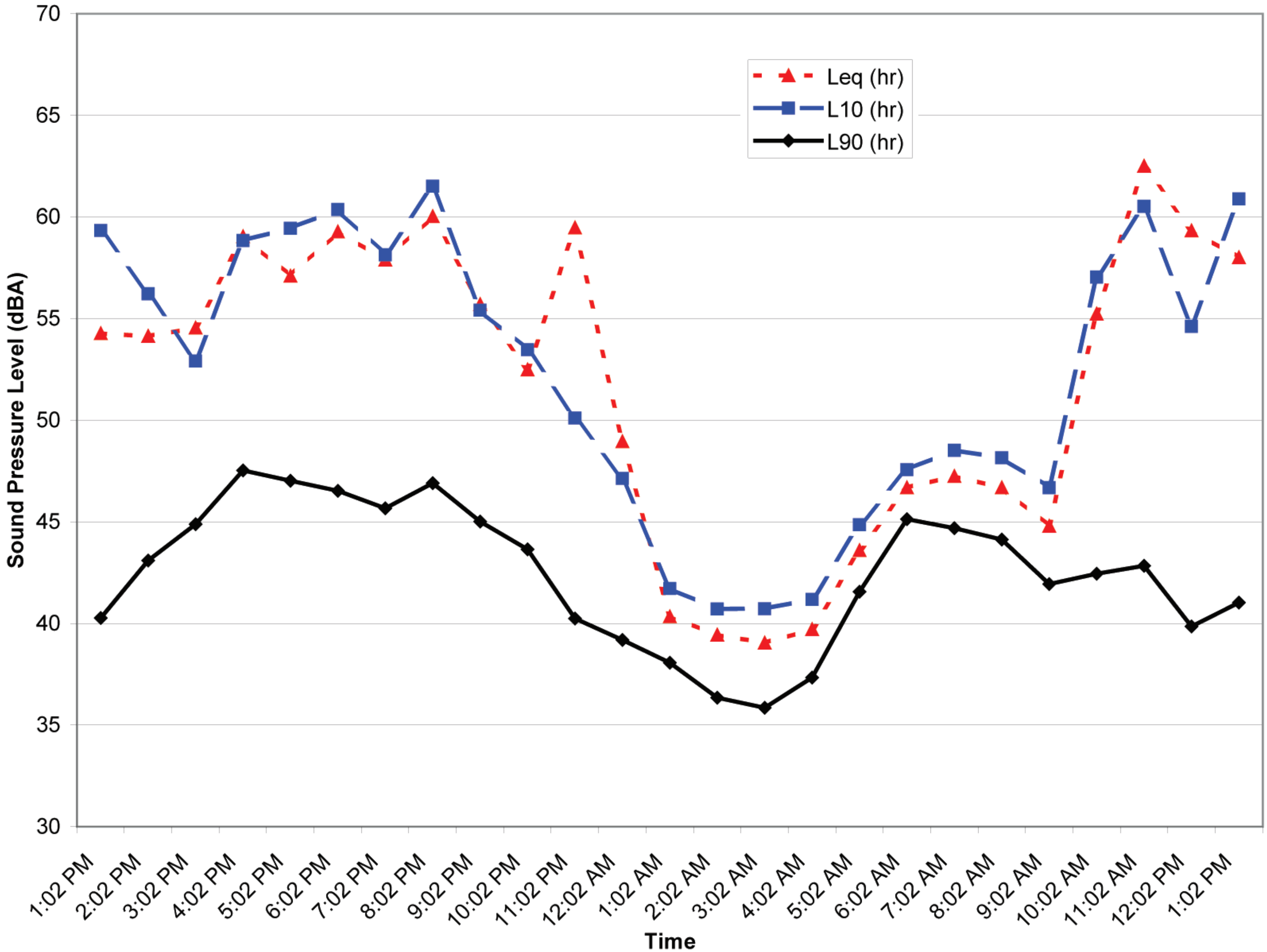

FIGURE 8.5-3
HOURLY VALUES AT M2
(7/10-11/2000)
APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY
CH2MHILL

D072001001RDD_59 (7/27/01)

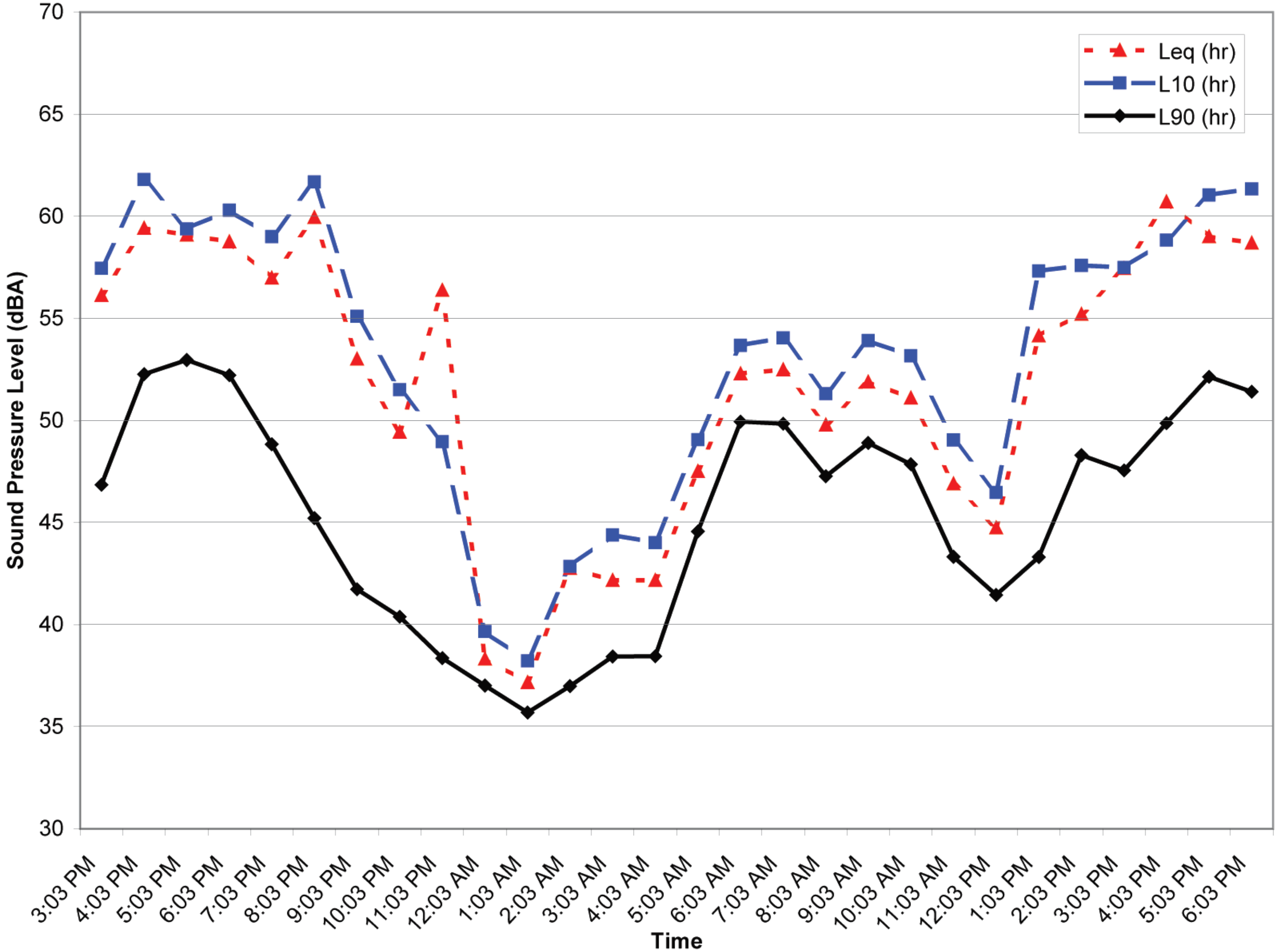

FIGURE 8.5-4
HOURLY VALUES AT M3
(7/11-12/2000)
APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY
CH2MHILL

D072001001RDD_60 (7/30/01)

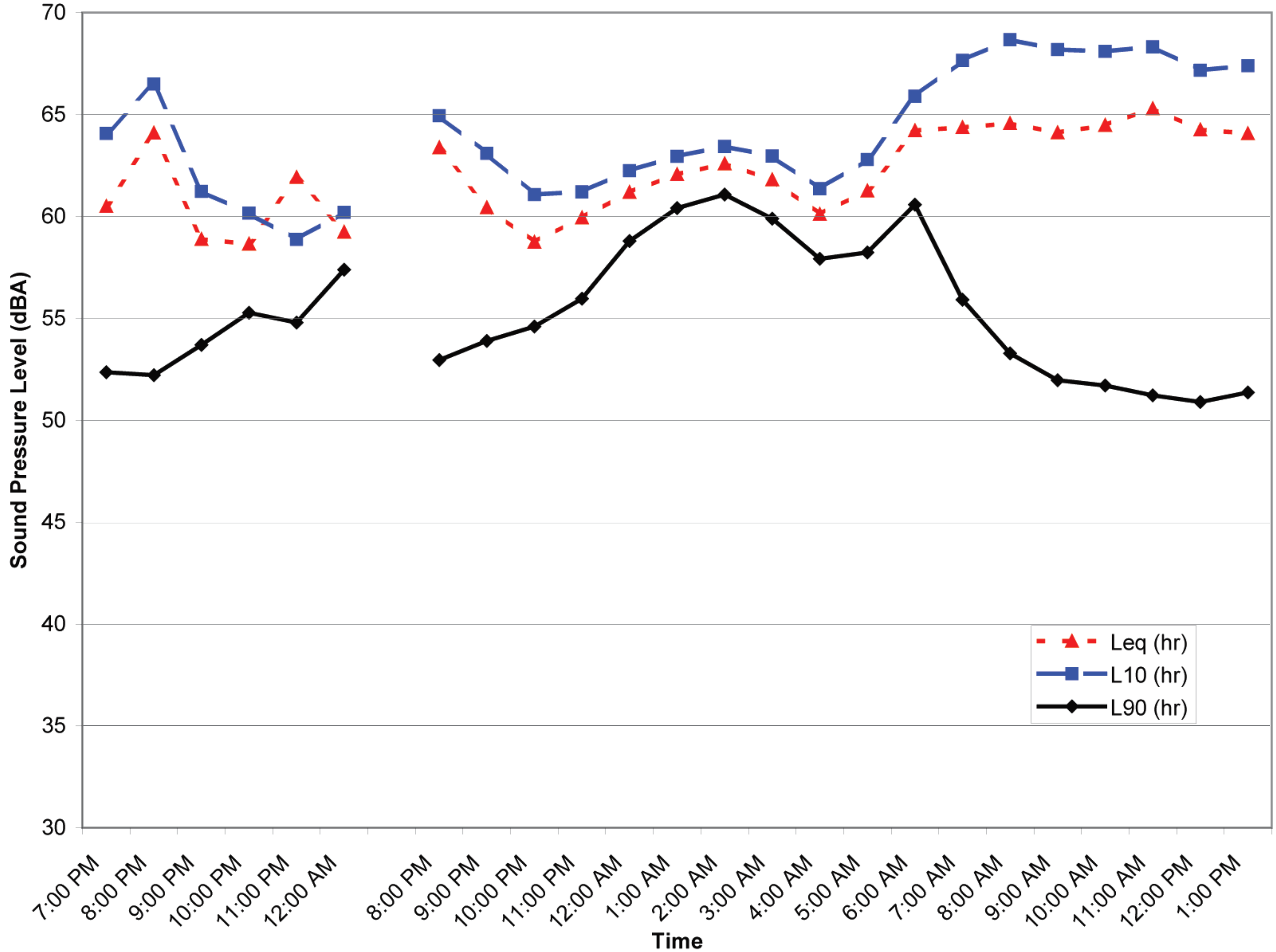

FIGURE 8.5-5
HOURLY VALUES AT M4
(7/11-13/2000)
APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY
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D072001001RDD_61 (7/30/01)

FIGURE 8.5-6
SITE PLAN SHOWING EXPECTED DAY-NIGHT AVERAGE (DNL) NOISE VALUES DURING FULL LOAD NORMAL OPERATIONS
APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

D072001001RDD_55 (7/19/01)

CH2MHILL

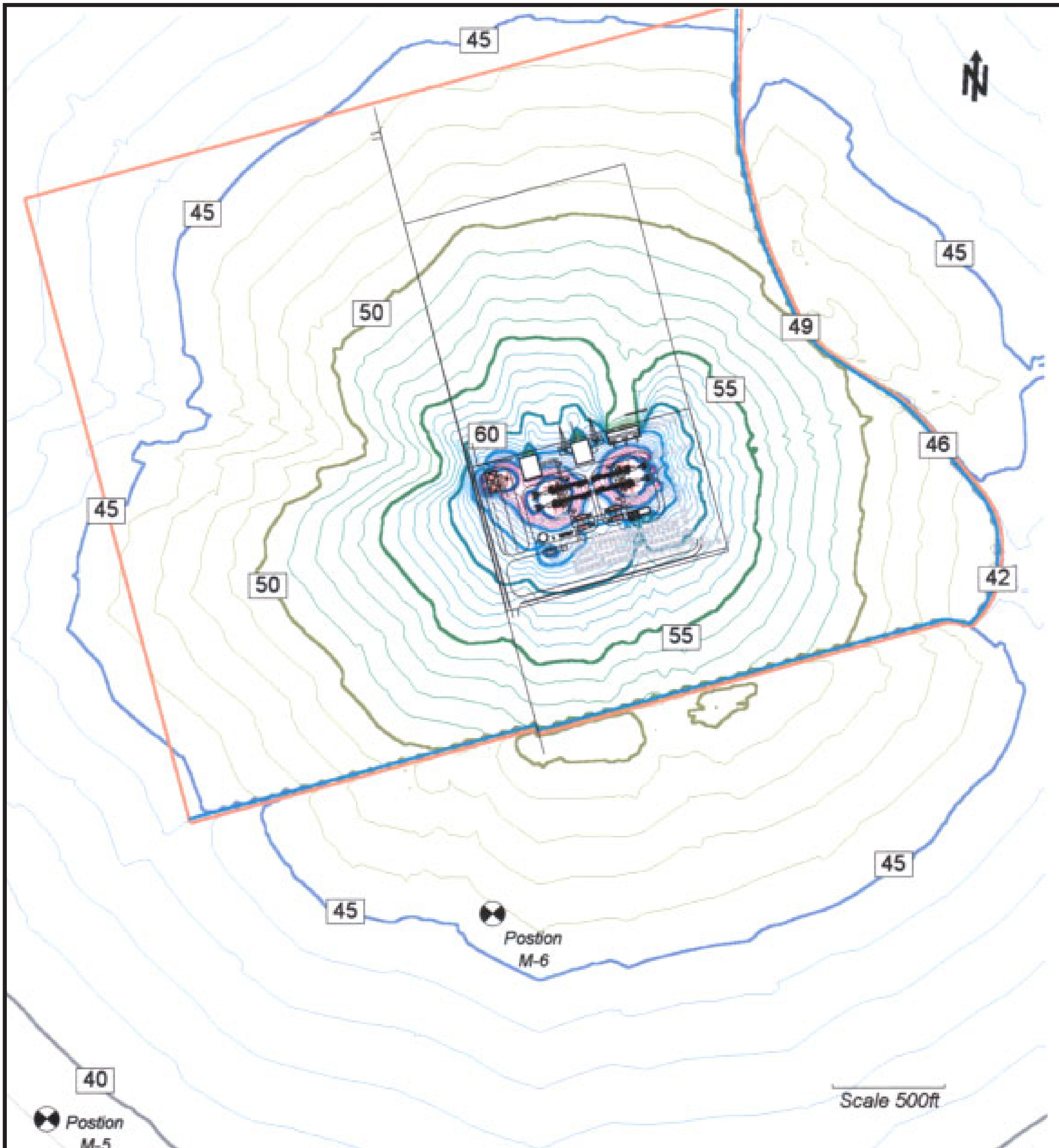

FIGURE 8.5-7
EXPECTED dBA NOISE CONTOURS FROM THE SITE DURING FULL LOAD NORMAL OPERATIONS
APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

D072001001RDD_56 (7/24/01)

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8.6 Public Health

This section presents an assessment of risks to human health potentially associated with operation of the proposed facility, focusing on chemical pollutants that could be emitted or released. Air pollutants for which California Ambient Air Quality Standards (CAAQS) or National Ambient Air Quality Standards (NAAQS) have been established are also addressed in Section 8.1 of this document.

The principal concerns for public health are associated with emissions of chemical substances to the air during routine operation of the proposed facility. Chemicals substances in the air that potentially pose risks to human health include byproducts from the combustion of natural gas. These chemical substances, which were addressed in a health risk assessment, included:

- Acetaldehyde
- Acrolein
- Benzene
- Formaldehyde
- Toluene
- Xylene

Combustion byproducts with established CAAQS or NAAQS, including oxides of nitrogen (NO_x), carbon monoxide and fine particulate matter are addressed in the Ambient Air Quality section (see Section 8.1.3). However, some discussion of the potential health risks associated with these substances is presented in this section. Human health risks potentially associated with accidental releases of stored acutely hazardous materials at the proposed facility (aqueous ammonia) are also discussed in this section.

8.6.1 Affected Environment

The U.S. Dataport project site is located in the Alviso area of north San Jose. The 174.4-acre project area is bordered by State Route 237 (SR 237) to the south, cultivated agricultural land and Coyote Creek to the east, the San Jose/Santa Clara Water Pollution Control Plant (WPCP) buffer land and WPCP sludge ponds to the north and west. The area surrounding the facility is largely agricultural. Potential receptors located nearby consist of thirteen residences and several light commercial or agricultural establishments. The nearest residential areas are located approximately 0.6 mile southwest, 0.8 mile east, and 1.4 miles southeast of the project site. There are no sensitive receptors (such as schools, daycare facilities, convalescent centers, or hospitals) in close proximity of the project site. Two schools, Anthony Spangler Elementary School and Curtner Elementary School are located in Milpitas, approximately one mile and 1.3 miles to the northeast, respectively. George Mayne Elementary School and Alviso Park are located approximately 1.4 miles to the west.

The Agnews Developmental Center (East Area) is located approximately 1.1 mile south of the center of the site. The Agnews Development Center, operated by the California Department of Development Services, provides care and treatment of persons with developmental disabilities, and also includes a gas-fired combined cycle cogeneration facility. A childcare center recently opened at the Cisco Systems facility on Barber Lane in

Milpitas, south of SR 237 and west of I-880. It is located approximately 1.1 mile southeast of the project site.

Sensitive receptors within a 3-mile radium of the project site are shown on Figures 8.6-1a and 1b, and descriptions of the receptors are presented in Appendix 8.6. Additional information describing land uses and populations surrounding the proposed facility is presented in Section 8.4, Land Use.

Figure 8.6-2 shows the terrain within a 10-mile radius of LECEF, including land elevations greater than the combustion turbine exhaust stack height of 90 feet. This figure serves as an index for the nine 7.5-minute Quad maps, five copies of which will be submitted to the California Energy Commission independently of Volume 1 of the AFC.

8.6.2 Environmental Consequences

Environmental consequences potentially associated with the project are potential human exposure to chemical substances emitted into the air. The human health risks potentially associated with these chemical substances were evaluated in a health risk assessment. The chemical substances potentially emitted to the air from the proposed facility include ammonia, volatile organic compounds (VOCs) and polycyclic aromatic hydrocarbons (PAHs) from the combustion turbines, and ammonia and trace metals from the air pollution control devices and cooling tower. These chemical substances are listed in Table 8.6-1.

8.6.2.1 Criteria Pollutants

Emissions of criteria pollutants will adhere to NAAQS or CAAQS as discussed in the Ambient Air Quality section (see Section 8.1.4). The proposed facility also will include emission control technologies necessary to meet the required emission standards specified for criteria pollutants under Bay Area Air Quality Management District (BAAQMD) rules. Offsets will be required for emissions of criteria pollutants that exceed specified thresholds, to assure that the project will not result in an increase in total emissions in the vicinity. Finally, air dispersion modeling results (presented in the Air Quality section, Section 8.1) show that emissions will not result in concentrations of criteria pollutants in air that exceed ambient air quality standards (either NAAQS or CAAQS). These standards are intended to protect the general public with a wide margin of safety. Therefore, the project is not anticipated to have a significant impact on public health from emissions of criteria pollutants.

8.6.2.2 Toxic Pollutants

Potential impacts associated with emissions of toxic pollutants to the air from the proposed facility were addressed in a health risk assessment, presented in Appendix 8.1C. The risk assessment was prepared using guidelines developed under the AB 2588 Air Toxics “Hot Spots” Information and Assessment Act (CAPCOA, 1993).

TABLE 8.6-1
Chemical Substances Potentially Emitted to the Air from Los Esteros Critical Energy Facility

Criteria Pollutants
Carbon monoxide
Oxides of nitrogen
Particulate matter
Noncriteria Pollutants (Toxic Pollutants)
Ammonia
Acetaldehyde
Acrolein
1,3-Butadiene
Benzene
Ethylbenzene
Formaldehyde
Hexane
Propylene
Propylene oxide
Toluene
Xylene
Polycyclic aromatic hydrocarbons (PAHs)
Benzo(a)anthracene
Benzo(a)pyrene
Benzo(b)fluoranthene
Benzo(k)fluoranthene
Chrysene
Dibenz(a,h)anthracene
Indeno(1,2,3-cd)pyrene
Naphthalene
Arsenic
Cadmium
Chromium
Copper
Lead
Mercury
Nickel
Silver
Zinc

Emissions of toxic pollutants potentially associated with the facility were estimated using emission factors approved by BAAQMD. Concentrations of these pollutants in air potentially associated with the emissions were estimated using dispersion modeling. Modeling allows the estimation of both short-term and long-term average concentrations in air for use in a risk assessment, accounting for site-specific terrain and meteorological conditions. Health risks potentially associated with the estimated concentrations of pollutants in air were characterized in terms of excess lifetime cancer risks (for carcinogenic substances), or comparison with reference exposure levels for noncancer health effects (for noncarcinogenic substances). Table 8.6-2 shows the toxicity values used to characterize health risks.

Health risks were evaluated for a hypothetical maximum exposed individual (MEI). The hypothetical MEI is an individual assumed to be located at the point where the highest concentrations of air pollutants associated with facility emissions are predicted to occur, based on air dispersion modeling. Human health risks associated with emissions from the proposed facility are unlikely to be higher at any other location than at the location of the

MEI. If there is no significant impact associated with concentrations in air at the MEI location, it is unlikely that there would be significant impacts in any location in the vicinity of the facility.

Health risks potentially associated with concentrations of carcinogenic pollutants in air were calculated as estimated excess lifetime cancer risks. The excess lifetime cancer risk for a pollutant is estimated as the product of the concentration in air and a unit risk value. The unit risk value is defined as the estimated probability of a person contracting cancer as a result of constant exposure to an ambient concentration of 1 $\mu g/m^3$ over a 70-year lifetime. In other words, it represents the increased cancer risk associated with continuous exposure to a concentration in air over a 70-year lifetime. Evaluation of potential noncancer health effects from exposure to short-term and long-term concentrations in air was performed by comparing modeled concentrations in air with reference exposure levels (RELs). A REL is a concentration in air at or below which no adverse health effects are anticipated. RELs are based on the most sensitive adverse effects reported in the medical and toxicological literature. Potential noncancer effects were evaluated by calculating a ratio of the modeled concentration in air and the REL. This ratio is referred to as a hazard quotient. The unit risk values and RELs used to characterize health risks associated with modeled concentrations in air were obtained from the *Air Toxics "Hot Spots" Program Revised 1992 Risk Assessment Guidelines* (CAPCOA, 1993), and are presented in Table 8.6-2.

8.6.2.2.1 Toxic Air Pollutant Risks

The excess lifetime cancer risk associated with concentrations in air estimated for the MEI location is estimated to be 0.02 x 10^{-6}. Excess lifetime cancer risks less than 1 x 10^{-6} are unlikely to represent significant public health impacts that require additional controls of facility emissions. Risks higher than 1 x 10^{-6} may or may not be of concern, depending upon several factors. These include the conservatism of assumptions used in risk estimation, size of the potentially exposed population and toxicity of the risk-driving chemicals. Risks associated with pollutants potentially emitted from the facility are presented by exposure pathway in Table 8.6-3. Further description of the methodology used to calculate health risks associated with emissions to the air is presented in Appendix 8.1. As described previously, human health risks associated with emissions from the proposed facility are unlikely to be higher at any other location than at the location of the MEI. If there is no significant impact associated with concentrations in air at the MEI location, it is unlikely that there would be significant impacts in any other location in the vicinity of the facility.

TABLE 8.6-2
Toxicity Values Used to Characterize Health Risks

Compound	Unit Risk Factor ($\mu g/m^3$)$^{-1}$	Chronic Reference Exposure Level ($\mu g/m^3$)	Acute Reference Exposure Level ($\mu g/m^3$)
Acetaldehyde	2.7E-06	9.00E+00	--
Acrolein	--	2.00E-02	2.50E+00
Ammonia	--	1.00E+02	2.1E+03
Arsenic	3.3E-03	5.10E-01	--
Benzene	2.9E-05	7.10E+01	--

TABLE 8.6-2
Toxicity Values Used to Characterize Health Risks

Compound	Unit Risk Factor ($\mu g/m^3)^{-1}$	Chronic Reference Exposure Level ($\mu g/m^3$)	Acute Reference Exposure Level ($\mu g/m^3$)
1,3-Butadiene	1.7E-04	--	--
Cadmium	4.2E-03	3.50E+00	--
Chromium	1.4E-01	2.00E-03	--
Copper	--	2.40E+00	--
Ethylbenzene	--	--	--
Formaldehyde	6.0E-06	3.60E+00	3.7E+02
Hexane	--	--	--
Lead	8.00E-05	1.50E+00	--
Mercury	--	--	3.00E+01
Naphthalene	--	--	--
Nickel	--	--	--
Polycyclic aromatic hydrocarbons	1.7E-03	--	--
Propylene	--	--	--
Propylene oxide	3.7E-06	3.00E+01	1.00E+03
Silver	--	--	--
Toluene	--	2.00E+02	--
Xylene	--	3.00E+02	4.4E+03
Zinc	--	3.50E+01	--

Source: CAPCOA, 1993; OEHHA, 2000

TABLE 8.6-3
Summary of Excess Lifetime Cancer Risks for the Maximum Exposed Individual

	Increased Lifetime Cancer Risk by Exposure Pathway		
Emission Source	Inhalation of Ambient Air	Soil Ingestion	Dermal Contact with Soil
Combustion Sources [a]	1.83E-08	3.33E-10	2.11E-10
Total Pathway Risk	1.83E-08	3.33E-10	2.11E-10
Total Risk	**0.02 in one million**		

[a] Combustion sources consist of gas turbines.

The chronic noncancer hazard quotients associated with concentrations in air estimated for the MEI location were well below one for all target organs. A noncancer hazard quotient less than one is unlikely to represent a significant impact to public health. Chronic noncancer hazard quotients associated with inhalation of pollutants potentially emitted from the facility are presented in Table 8.6-4. A summary of chronic exposures through the non-inhalation exposure pathways for the MEI is presented in Table 8.6-5. The chemicals providing the largest contribution to noncancer risks associated with facility emissions are acrolein and ammonia, from combustion sources.

TABLE 8.6-4
Summary of Chronic Noncancer Hazard Quotients (Inhalation Exposure Pathway) for the Maximum Exposed Individual

	Target Organ[a]							
Emission Source	**Resp**	**CV/BL**	**CNS**	**Skin**	**Repro**	**Kidn**	**GI/LV**	**Immun**
Combustion Sources[b]	0.0028	<0.0001	<0.0001	0.0021	<0.0001	<0.0001	<0.0001	NA
Total Chronic Hazard Quotient	0.0028	<0.0001	<0.0001	0.0021	<0.0001	<0.0001	<0.0001	NA
Total, All Pathways	0.0049							

Notes:
[a] Combustion sources include gas turbines
Resp = respiratory
CV/BL = cardiovascular/blood
CNS = central nervous system
Repro = reproductive system
Kidn = renal system
GI/LV = gastrointestinal/liver
Immun = immunological system
NA = not applicable; pollutants emitted do not affect these target organs

TABLE 8.6-5
Summary of Chronic Exposures (Non-Inhalation Exposure Pathway) for the Maximum Exposed Individual

	Total Dose from Non-Inhalation Exposure Pathways (mg/kg-d)			
Chemical		**Combustion Sources**	**REL[a] (mg/kg-d)**	**Hazard Quotient (Total Dose/REL)**
Naphthalene	--	5.14E-07	NA	--
PAH	--	2.23E-10	NA	--

Notes:
[a] REL – noncancer Reference Exposure Level
NA – value not available for this pollutant

The acute noncancer hazard quotients associated with concentrations in air are shown in Table 8.6-6. The noncancer hazard quotients for all target organs fall below one. The chemicals providing the largest contribution to acute noncancer health risks are ammonia and acrolein. As described previously, a hazard quotient less than one is unlikely to represent significant impact to public health. As described previously, human health risks associated with emissions from the proposed facility are unlikely to be higher at any other location than at the location of the MEI. If there is no significant impact associated with concentrations in air at the MEI location, it is unlikely that there would be significant impacts in any other location in the vicinity of the facility.

TABLE 8.6-6
Summary of Acute Noncancer Hazard Quotients for the Maximum Exposed Individual

Emission Source	Target Organ							
	Resp	CV/BL	CNS	Eye	Repro	Kidn	GI/LV	Immun
Combustion Sources [a]	0.02	<0.0001	<0.0001	0.02	<0.0001	NA	NA	NA
Total Acute Hazard Quotient	0.02	<0.0001	<0.0001	0.02	<0.0001	NA	NA	NA

Notes:
[a] Combustion sources include gas turbines
Resp = respiratory
CV/BL = cardiovascular/blood
CNS = central nervous system
Repro = reproductive system
Kidn = renal system
GI/LV = gastrointestinal/liver
Immun = immunological system

8.6.2.2.2 Characterization of Risks from Toxic Air Pollutants

The estimates of excess lifetime cancer risks, and noncancer risks associated with chronic or acute exposures, fall below thresholds used for regulating emissions of toxic pollutants to the air. Historically, exposure to any level of a carcinogen has been considered to have a finite risk of inducing cancer. In other words, there is no threshold for carcinogenicity. Since risks at low levels of exposure cannot be quantified directly by either animal or epidemiological studies, mathematical models have used to extrapolate from high to low doses. This modeling procedure is designed to provide a highly conservative estimate of cancer risks based on the most sensitive species of laboratory animal for extrapolation to humans (i.e., the assumption being that man is as sensitive as the most sensitive animal species). Therefore, the true risk is not likely to be higher than risks estimated using unit risk factors and is most likely lower, and could even be zero (USEPA, 1986; USEPA, 1996).

An excess lifetime cancer risk of 1×10^{-6} is typically used as a threshold of significance for potential exposure to carcinogenic substances in air. The excess cancer risk level of 1×10^{-6} which has historically been judged to be an acceptable risk originates from efforts by the Food and Drug Administration (FDA) to use quantitative risk assessment for regulating carcinogens in food additives in light of the zero tolerance provision of the Delany Amendment (Hutt, 1985). The associated dose, known as a “virtually safe dose” (VSD) has become a standard used by many policy makers and the lay public for evaluating cancer risks. However, a recent study of regulatory actions pertaining to carcinogens found that an acceptable risk level can often be determined on a case-by-case basis. This analysis of 132 regulatory decisions, found that regulatory action was not taken to control estimated risks below 1×10^{-6} (one-in-one million), which are called *de minimis* risks. *De minimis* risks are historically considered risks of no regulatory concern. Chemical exposures with risks above 4×10^{-3} (four-in-ten thousand), called *de manifestis* risks, were consistently regulated. *De manifestis* risks are typically risks of regulatory concern. The risks falling between these two extremes were regulated in some cases, but not in others (Travis et al, 1987).

The estimated lifetime cancer risks to the maximally exposed individual are less than 1×10^{-6}. These risk estimates were calculated using assumptions that are highly health conservative. Evaluation of the risks associated with the facility emissions should consider that the conservatism in the assumptions and methods used in risk estimation considerably overstate the risks from facility emissions. Based on the results of this risk assessment, there are no significant public health impacts anticipated from emissions of toxic pollutant to the air from the proposed facility.

8.6.2.3 Hazardous Materials

Hazardous materials will be used and stored at the facility. The hazardous materials used on-site and descriptions of their uses are presented in Section 8.12. Use of chemicals at the proposed facility will be in accordance with standard practices for storage and management of hazardous materials. Normal use of hazardous materials, therefore, will not pose significant impacts to public health. Mitigation measures will be in place to prevent accidental releases resulting in no potential impacts to the public (see Section 8.12).

The California Health and Safety Code Sections 25531 to 25541 and Code of Federal Regulations (CFR) Title 40 Part 68 under the Clean Air Act establish emergency response planning requirements for acutely hazardous materials. These regulations require preparation of a Risk Management Plan (RMP), which is a comprehensive program to identify hazards and predict the areas that may be affected by a release of an acutely hazardous material (AHM). Aqueous ammonia, an acutely hazardous material, will be used at the facility. Aqueous ammonia may generate hazardous gases that could migrate offsite when released.

A vulnerability analysis has been performed (see Section 8.12) demonstrating no public health risks if a spill or rupture of the 19 percent aqueous ammonia storage tank were to occur.

8.6.2.4 Operation Odors

Small amounts of ammonia used to control oxides of nitrogen (NO_x) emissions may escape up the exhaust stack but would not produce operational odors. The expected exhaust gas ammonia concentration, known as ammonia “slip,” will be less than 10 parts per million (ppm). After mixing with the atmosphere, the concentration at ground level will be far below the detectable odor threshold of 5 ppm that the Compressed Gas Association has determined to be acceptable. Therefore, potential ammonia emissions are not expected to create objectionable odors. Other combustion contaminants are not present at concentrations that could produce objectionable odors.

8.6.3 Mitigation Measures

8.6.3.1 Criteria Pollutants

Emissions of criteria pollutants will be minimized by applying Best Available Control Technology (BACT) to the facility. BACT for the combustion turbine includes the combustion of natural gas.

The proposed project location is in an area that is designated by the state as nonattainment for ozone and particulate matter (PM). Therefore, all increases in emissions of NO_x, precursor organic compound (POC), volatile organic compound (VOC), particulate matter with an aerodynamic diameter less than a nominal 10 micrometers (PM_{10}), and sulfur oxides (SO_x) must be fully offset if emissions exceed specified trigger limits. The combination of using BACT and providing emission offsets as needed will result in no net increase in criteria pollutants. Therefore, further mitigation of emissions are not required to protect public health.

8.6.3.2 Toxic Pollutants

Emissions of toxic pollutants to the air will be minimized through the use of natural gas as the only fuel at the proposed facility.

8.6.3.3 Hazardous Materials

Mitigation measures for hazardous materials are presented below and discussed in more detail in Section 8.12. Potential public health impacts from the use of hazardous materials are only expected to occur as a result of an accidental release. The plant has many safety features designed to prevent and minimize impacts from the use and accidental release of hazardous materials. The LECEF will include the following design features:

- Curbs, berms, and/or concrete pits will be provided where accidental release of chemicals may occur.
- A fire protection system will be included to detect, alarm, and suppress a fire, in accordance with the applicable laws, ordinances, regulations, and standards (LORS).
- Construction of the 19 percent aqueous ammonia storage system will be in accordance with applicable LORS.

A Risk Management Plan (RMP) for the LECEF will be prepared, if required, prior to commencement of facility operations. The RMP will estimate the risk presented by handling ammonia at the facility. The RMP will include a hazard analysis, off-site consequence analysis, seismic assessment, emergency response plan, and training procedures. The RMP process will accurately identify and propose adequate mitigation measures to reduce the risk to the lowest possible level.

A safety program will be implemented and will include safety training programs for contractors and operations personnel, including instructions on 1) the proper use of personal protective equipment, 2) safety operating procedures, 3) fire safety, and 4) emergency response actions. The safety program will also include programs on safely operating and maintaining systems that use hazardous materials. Emergency procedures for LECEF personnel include Facility evacuation, hazardous material spill cleanup, fire prevention, and emergency response.

Areas subject to potential leaks of hazardous materials will have secondary containment. Incompatible materials will be stored in separate containment areas. Containment areas will be drained to either an oily waste collection sump or pumped into a container for offsite disposal. Also, piping and tanks exposed to potential traffic hazards will be additionally protected by traffic barriers.

8.6.4 Laws, Ordinances, Regulations, and Standards

An overview of the regulatory process for public health issues is presented in this section. The relevant LORS that affect public health and are applicable to this project are identified in Table 8.6-7. Table 8.6-7 also summarizes the primary agencies responsible for public health, as well as the general category of the public health concern regulated by each of these agencies. The conformity of the project to each of the LORS applicable to public health is also presented in this table, as well as references to the selection locations within this report where each of these issues is addressed. Points of contact with the primary agencies responsible for public health are identified in Table 8.6-8.

TABLE 8.6-7
Summary of Primary Regulatory Jurisdiction for Public Health

LORS	Public Health Concern	Primary Regulatory Agency	Project Conformance
Clean Air Act	Public exposure to air pollutants	USEPA Region IX CARB BAAQMD	Based on results of risk assessment as per CAPCOA guidelines, toxic contaminants do not exceed acceptable levels. (See Section 8.6.2.2) Emissions of criteria pollutants will be minimized by applying BACT to the facility. Increases in emissions of criteria pollutants will be fully offset. (Section 8.6.3.1)
Health and Safety Code Sections 25249.5 *et seq*. (Safe Drinking Water and Toxic Enforcement Act of 1986—Proposition 65)	Public exposure to chemicals known to cause cancer or reproductive toxicity	Office of Environmental Health and Hazard Assessment (OEHHA)	Based on results of risk assessment as per CAPCOA guidelines, toxic contaminants do not exceed thresholds that require exposure warnings. (See Section 8.6.2.2)
40 CFR Part 68 (Risk Management Plan)	Public exposure to acutely hazardous materials	USEPA Region IX Santa Clara County Office of Emergency Services (OES) City of San Jose Fire Department	A vulnerability analysis will be performed to assess potential risks from a spill or rupture of the aqueous ammonia storage tank. (See Section 8.6.2.3) An RMP will be prepared prior to commencement of facility operations. (See Section 8.6.3.3)
Health and Safety Code Sections 25531 to 25541	Public exposure to acutely hazardous materials	Santa Clara County Office of Emergency Services (OES) CARB BAAQMD	A vulnerability analysis will be performed to assess potential risks from a spill or rupture of the aqueous ammonia storage tank. (See Section 8.6.2.3)
Health and Safety Code Sections 44360 to 44366 (Air Toxics "Hot Spots" Information and Assessment Act—AB 2588)	Public exposure to toxic air contaminants	CARB BAAQMD	Based on results of risk assessment as per CAPCOA guidelines, toxic contaminants do not exceed acceptable levels. (See Section 8.6.2.2)

TABLE 8.6-8
Summary of Agency Contacts for Public Health

LORS	Public Health Concern	Primary Regulatory Agency	Regulatory Contact
Clean Air Act	Public exposure to air pollutants	USEPA Region IX CARB BAAQMD	David Howekamp, (916) 744-1219 Ray Menebroker, (916) 322-6026 William deBoisBlanc, (415) 749-4707
Health and Safety Code Sections 25249.5 *et seq*. (Safe Drinking Water and Toxic Enforcement Act of 1986—Proposition 65)	Public exposure to chemicals known to cause cancer or reproductive toxicity	Office of Environmental Health and Hazard Assessment (OEHHA)	Cynthia Oshita or Susan Long, (916) 445-6900
40 CFR Part 68 (Risk Management Plan)	Public exposure to acutely hazardous materials	USEPA Region IX Santa Clara County Office of Emergency Services (OES) City of San Jose Fire Department	David Howekamp, (916) 744-1219 Angela Sullivan, (408) 615-4964 Dave Parker (408) 615-4961 (HAZMAT Emergency Response Team)
Health and Safety Code Sections 25531 to 25541	Public exposure to acutely hazardous materials	Santa Clara County Office of Emergency Services (OES) City of Santa Clara Fire Department BAAQMD	Angela Sullivan, (408) 615-4964 Dave Parker (408) 615-4961 (HAZMAT Emergency Response Team) William deBoisBlanc, (415) 749-4707
Health and Safety Code Sections 44360 to 44366 (Air Toxics “Hot Spots” Information and Assessment Act—AB 2588)	Public exposure to toxic air contaminants	CARB BAAQMD	Ray Menebroker, (916) 322-6026 William deBoisBlanc, (415) 749-4707

8.6.5 References

ATSDR. 1996. *Toxicological Profile for Lead. Update.* Agency for Toxic Substances and Disease Registry.

CAPCOA. 1993. *Air Toxics “Hot Spots” Program, Revised 1992 Risk Assessment Guidelines.* California Air Pollution Control Officers Association. October 1993.

Hutt. P.B. 1985. Use of quantitative risk assessment in regulatory decisionmaking under federal health and safety statutes, in *Risk Quantitation and Regulatory Policy*. Eds. D.G. Hoel, R.A. Merrill and F.P. Perera. Banbury Report 19, Cold Springs Harbor Laboratory.

OEHHA. 2000.

Travis, C.C., E.A.C. Crouch, R. Wilson and E.D. Klema. 1987. Cancer risk management: a review of 132 federal regulatory cases. *Environ. Sci. Technol*. 21:415-420.

U.S. Environmental Protection Agency (USEPA). 1986. Guidelines for carcinogen risk assessment. *Federal Register*. 51:33992. September 24, 1986.

USEPA. 1996. *Proposed Guidelines for Carcinogen Risk Assessment.* Office of Health and Environmental Assessment. EPA/600/P-92/003C. April 1996.

NOTE: AREAS WITHIN A 3MILE RADIUS THAT ARE NOT SHOWN IN THE FIGURE DO NOT CONTAIN SENSITIVE RECEPTORS. SOME RECEPTORS ARE SHOWN ON BOTH FIGURES 8.6-1A AND 8.6-1B

FIGURE 8.6-1A
SENSITIVE RECEPTORS WITHIN 3 MILES OF THE PROJECT SITE-NORTH SIDE

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LOS ESTEROS CRITICAL ENERGY FACILITY

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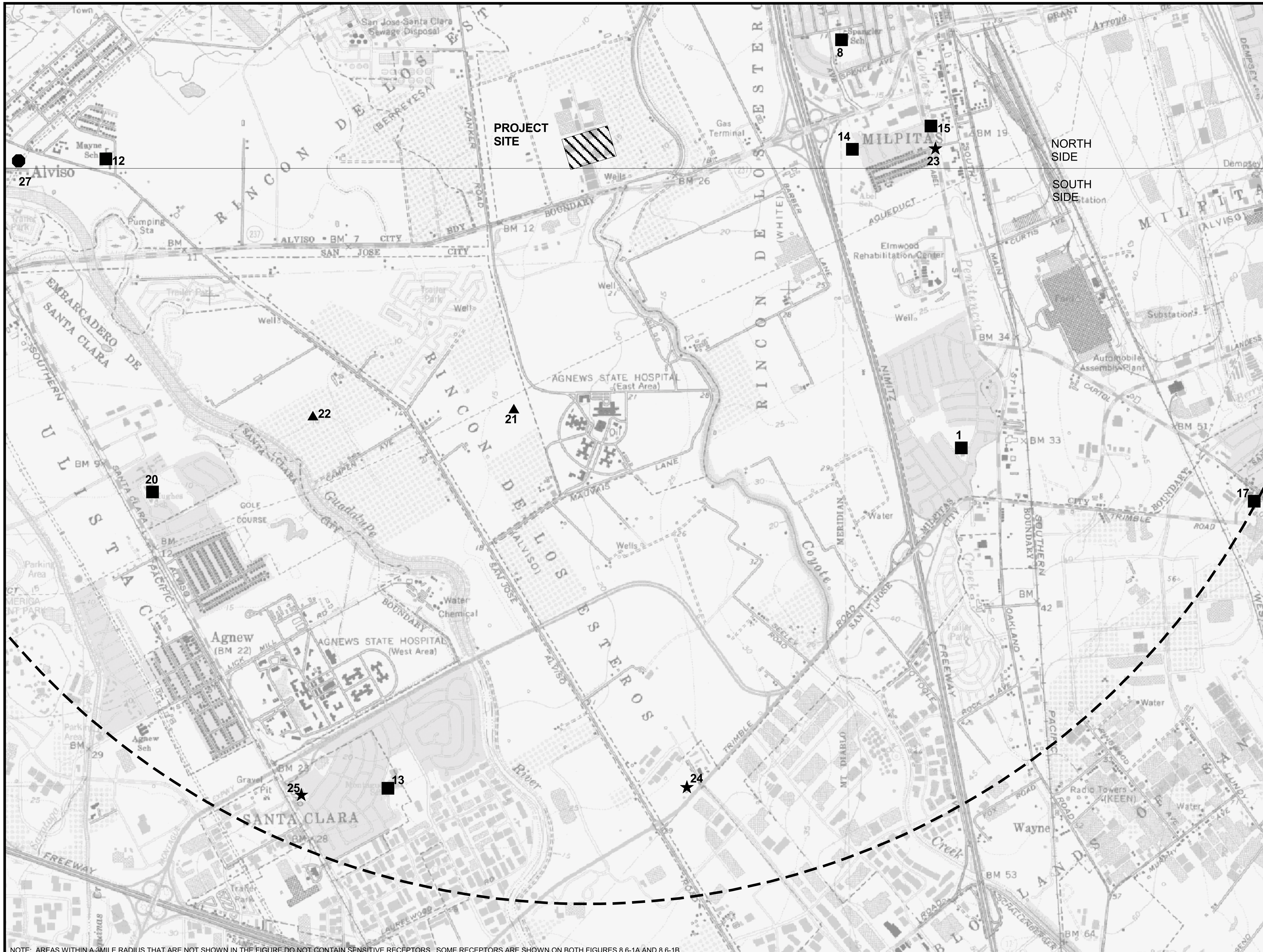

FIGURE 8.6-1B
SENSITIVE RECEPTORS WITHIN 3 MILES OF THE PROJECT SITE-SOUTH SIDE
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8.7 Worker Health and Safety

This section summarizes the health and safety issues that may be encountered during the construction and operation of the General Electric LM-6000 combustion turbines that will be installed at the project site. It also contains information on the health and safety programs to be implemented during construction and operation, the safety training programs that will educate workers on hazards and hazard control methods, fire protection, and the worker LORS with which the project will comply.

8.7.1 Workplace Description

Section 2 provides a detailed description of the facility and its location.

During installation and operations of the new turbine units, workers will be exposed to the typical hazards associated with the construction and operation of conventional gas-powered power generation equipment. To evaluate the hazards, a hazard analysis has been prepared for this project. The analysis identifies the hazards anticipated during concrete pad construction and placement of the packaged units and during operation of the additional power generation equipment.

The hazard analysis prepared for concrete pad equipment placement activities is outlined in Table 8.7-1; and the hazard analysis prepared for operation of the new turbine units is outlined in Table 8.7-2. Since the types of hazards anticipated during plant construction and operation are similar, there is considerable duplication between the tables. However, it is anticipated that the situation in which a particular hazard will be encountered will differ in the construction and operation phases of the project.

8.7.2 Overview of Hazards and Related Programs and Training

Programs are overall plans that set forth the method or methods that will be followed to achieve particular health and safety objectives. For example, the Fire Protection and Prevention Program will describe what has to be done to protect against and prevent fires. This will include equipment required, such as alarm systems and firefighting equipment, and procedures to follow to protect against fires. The Emergency Action Program / Plan will describe escape procedures, rescue and medical procedures, alarm and communication systems, and response procedures for very hazardous materials that can migrate, such as ammonia. The programs or plans are contained in written documents that are usually kept at specific locations within the facility.

Each program or plan will contain training requirements that are translated into detailed training courses. These courses are taught to plant construction and operating personnel as needed. For example, all plant operating personnel will receive training in escape procedures under the Emergency Action Program / Plan, but only those working with flammables will receive training under the Fire Protection and Prevention Program and under the Hazard Communication Program.

Tables 8.7-1 and 8.7-2, which list construction and operation activities and associated hazards, also show (under the “Control” column) the program designed to reduce the occurrence of each hazard.

TABLE 8.7-1
Construction Hazard Analysis

Activity	Hazard*	Control*
Motor vehicle & heavy equipment use	Employee injury and property damage from collisions between people and equipment	Motor Vehicle and Heavy Equipment Safety Program
Forklift operation	Same as heavy equipment	Forklift Operation Program
Trenching and excavation	Employee injury and property damage from the collapse of trenches and excavations	Excavation/Trenching Program
Working at elevated locations	Falls from the same level and elevated areas	Fall Prevention Program Scaffolding/Ladder Safety Program Articulating Boom Platforms Program
Use of cranes and derricks	Property damage from falling loads Employee injuries from falling loads Injuries and property damage from contact with crane or derrick	Crane and Material Handling Program Electrical Safety Program
Working with flammable and combustible liquids	Fire/spills	Fire Protection and Prevention Program Housekeeping and Material Handling and Storage Program
Hot work (including cutting and welding)	Employee injury and property damage from fire Exposure to fumes during cutting and welding Ocular exposure to ultraviolet and infrared radiation during cutting and welding	Hot Work Safety Program Respiratory Protection Program Employee Exposure Monitoring Program Personal Protective Equipment Program
Inspection and maintenance of temporary systems used during construction activities	Employee injury and property damage from contact with hazardous energy sources (electrical, thermal, mechanical, etc.)	Electrical Safety Program
Working on electrical equipment and systems	Employee contact with live electricity and energized equipment	Electrical Safety Program Personal Protective Equipment Program
Confined space entry	Employee injury from physical and chemical hazards	Permit-Required Confined Space Entry Program
General construction activities	Employee injury from hand and portable power tools	Hand and Portable Power Tool Safety Program Personal Protective Equipment

TABLE 8.7-1
Construction Hazard Analysis

Activity	Hazard*	Control*
		Program
General construction activities	Employee injury/property damage from inadequate walking and work surfaces	Housekeeping and Material Handling and Storage Program
General construction activities	Employee exposure to occupational noise	Hearing Conservation Program Personal Protective Equipment Program
General construction activities	Employee injury from improper lifting and carrying of materials and equipment	Back Injury Prevention Program
General construction activity	Employee injury to head, eye/face, hand, body, foot, and skin	Personal Protective Equipment Program
General construction activity	Employee exposure to hazardous gases, vapors, dusts, and fumes	Hazard Communication Program Respiratory Protection Program Personal Protective Equipment Program Air Monitoring Program
General construction activity	Employee exposure to various hazards	Injury and Illness Prevention Program
	Reporting of hazardous conditions during construction	Injury and Illness Prevention Program
General construction activity	Heat and cold stress	Heat and Cold Stress Monitoring and Control Program
General equipment placement activities	Employee injury/property damage from inadequate walking and work surfaces	Housekeeping and Material Handling and Storage Program
Construction and testing of high-pressure steam and air systems	Employee injury and property damage due to failure of pressurized system components or unexpected release of pressure	Pressure Vessel and Pipeline Safety Program Electrical Safety Program

*The hazards and hazard controls provided are generic to construction activities. During various phases of construction, a hazard analysis will be performed to evaluate the hazards and develop appropriate controls.

TABLE 8.7-2
Operation Hazard Analysis

Activity	Hazard	Control
Motor vehicle and heavy equipment use	Employee injury and property damage from collisions between people and equipment	Motor Vehicle and Heavy Equipment Safety Program
Forklift operations	Same as heavy equipment	Forklift Operation Program
Trenching and excavation	Employee injury and property damage from the collapse of trenches and excavations	Excavation/Trenching Program
Working at elevated locations	Falls from the same level and elevated areas	Fall Protection Program Scaffolding/Ladder Safety Program
Use of cranes or derricks	Property damage from falling loads Employee injuries from falling loads Injuries and property damage from contact with crane or derrick	Crane and Material Handling Program
Working with flammable and combustible liquids	Fire/spills	Fire Protection and Prevention Program
Working with hazardous materials	Employee injury due to ingestion, inhalation, dermal contact	Hazard Communication Program
Hot work (including cutting and welding)	Employee injury and property damage from fire Exposure to fumes during cutting and welding Ocular exposure to ultraviolet and infrared radiation during cutting and welding	Hot Work Safety Program Respiratory Protection Program Employee Exposure Monitoring Program Personal Protective Equipment Program Fire Protection and Prevention Program
Troubleshooting and maintenance of plant systems and general operational activities	Employee injury and property damage from contact with hazardous energy sources (electrical, thermal, mechanical, etc.)	Electrical Safety Program
Working on electrical equipment and systems	Employee contact with live electricity	Electrical Safety Program Personal Protective Equipment Program
Confined space entry	Employee injury from physical and chemical hazards	Permit-Required Confined Space Entry Program
General plant operation activities	Employee injuries from hand and portable power tools	Hand and Portable Power Tool Safety Program Personal Protective Equipment Program
General plant operation activities	Employee injury and property damage from inadequate walking and work surfaces	Housekeeping and Material Handling and Storage Program
General plant operation activities	Employee overexposure to occupational noise	Hearing Conservation Program Personal Protective Equipment Program

TABLE 8.7-2
Operation Hazard Analysis

Activity	Hazard	Control
General plant operation activities	Employee injury from improper lifting and carrying of materials and equipment	Back Injury Prevention Program
General plant operation activities	Employee injury and property damage from unsafe driving	Safe Driving Program
General plant operation activities	Employee overexposure to hazardous gases, vapors, dusts, and fumes	Hazard Communication Program Respiratory Protection Program Personal Protective Equipment Program Employee Exposure Monitoring Program
General plant operation activities	Reporting and repair of hazardous conditions	Injury and Illness Prevention Program
General plant operation activities	Heat and cold stress	Heat and Cold Stress Monitoring and Control Program
Maintenance and repair of high-pressure steam and air systems	Employee injury and property damage due to failure of pressurized system components or unexpected release of pressure	Pressure Vessel and Pipeline Safety Program Electrical Safety Program
Ammonia storage	Ammonia release	Emergency Action Program/Plan Risk Management Plan (See Section 8.12)

The hazard and hazard controls provided are generic to operational activities. This hazard analysis may have to be updated if plant operations change or new equipment is added that was not considered during this evaluation.

8.7.3 Health and Safety Programs

Prior to the start of construction of the plant, a Construction Safety Program will be developed that will include information on the hazards associated with this project, will provide information on the control measures that must be implemented to protect construction personnel and visitors from the identified hazards, and will outline procedures that must be met with in order to operate in compliance with the LORS listed in Table 8.7-6. The primary components of the Construction Safety Program will include the following: Injury and Illness Prevention Program, Fire Protection and Prevention Program, Personal Protective Equipment Program, Emergency Action Program, and general Construction Safety Plan. Additional specific components of this program that will be implemented as required are included in Table 8.7-1. Pertinent information from applicable consensus standards will also be included in the Construction Safety Program as outlined in Table 8.7-8, and permits will be implemented as described in Table 8.7-9.

Periodic audits will be performed by qualified individuals to determine whether proper work practices are being used to mitigate hazardous conditions and to evaluate regulatory compliance.

The following sections contain information on the anticipated content of the health and safety programs.

8.7.3.1 Construction Health and Safety Program

The Injury and Illness Prevention Program, Fire Protection and Prevention Program, Personal Protective Equipment Program, Emergency Action Program / Plan, and Construction and Equipment Placement Safety Programs that will be implemented during construction are outlined below. These programs will be designed to meet the California Occupational Safety and Health Administration (Cal-OSHA) requirements.

8.7.3.1.1 Injury and Illness Prevention Program

- Philosophy and safety commitment
- Safety leadership and responsibilities
- Accountability
- Specific core safety processes (See Components of the Construction Safety Program)
- Employee safety communication
- Planning "job hazard analysis and pre-task"
- Compliance with work rules and safe work practices
- Measurement of compliance and effectiveness of prevention methods
- Communication of performance and implementation of necessary improvements
- Training and other communication requirements

8.7.3.1.2 Fire Protection and Prevention Program

- General requirements
- Housekeeping and proper material storage
- Employee alarm / communication system
- Portable fire extinguishers
- Fixed firefighting equipment
- Fire control and containment
- Flammable and combustible liquid storage
- Use of flammable and combustible liquids
- Dispensing and disposal of flammable liquids
- Service and refueling areas
- Training

8.7.3.1.3 Personal Protective Equipment Program

- Personal protective devices
- Head protection
- Eye / face protection
- Body protection
- Hand protection
- Foot protection
- Skin Protection
- Fall protection
- High-voltage protection
- Respiratory protection
- Hearing protection
- Hazard analysis
- Training

8.7.3.1.4 Emergency Action Program/Plan

- Emergency procedures for the protection of personnel, equipment, the environment, and materials
- Fire and emergency reporting procedures
- Response actions for accidents involving personnel and or property
- Bomb threats
- Site assembly and emergency evacuation route procedures
- Natural disasters response
- Reporting and notification procedures for emergencies; contacts, including offsite and local authorities
- Alarm and communication systems
- Spill response, prevention, and control action plan
- Emergency response equipment
- Emergency personnel (response team) responsibilities and notification roster
- Training requirements

8.7.3.1.5 Construction Safety Programs

Motor Vehicle and Heavy Equipment Safety Program

- Operation and maintenance of vehicles
- Inspection
- Personal Protective Equipment (PPE)
- Training

Forklift Operation Program

- Trained and certified operators
- Fueling operations
- Safe operating parameter
- Training

Excavation/Trenching Program

- Shoring, sloping, and benching requirements
- Cal/OSHA permit requirements
- Inspection
- Air monitoring
- Access and egress

Fall Protection Program

- Evaluation of fall hazards
- Protection devices
- Training

Scaffolding/Ladder Safety Program

- Construction and inspection of equipment
- Proper use
- Training

Articulating Boom Platforms Program

- Inspection of equipment
- Load ratings
- Safe operating parameters
- Operator training

Crane and Material Handling Program

- Certified and licensed operators
- Inspection of equipment
- Load ratings
- Safe operating parameters
- Training

Hot Work Safety Program

- Welding and cutting procedures
- Fire watch
- Hot work permit
- PPE
- Training

Employee Exposure Monitoring Program

- Exposure evaluation
- Monitoring requirements
- Reporting of results
- Medical surveillance
- Training

Electrical Safety Program

- Grounding procedure
- Lock-out/tag-out (LO/TO) procedures
- Overhead and underground utilities
- Utility clearance
- Training

Permit-Required Confined Space Entry Program

- Air monitoring and ventilation requirements
- Rescue procedures
- LO/TO and blocking, blinding, and blanking requirements
- Permit completion
- Training

Hand and Portable Power Tool Safety Program

- Guarding and proper operation
- Training

Housekeeping and Material Handling and Storage Program

- Storage requirements
- Walkways and work surfaces
- Equipment handling requirements

- Training

Hearing Conservation Program

- Identifying high-noise environments
- Exposure monitoring
- Medical surveillance requirements
- Hearing protective devices
- Training

Back Injury Prevention Program

- Proper lifting and material handling procedures
- Training

Hazard Communication Program

- Labeling requirements
- Storage and handling
- Material Safety Data Sheets (MSDS)
- Chemical inventory
- Training

Respiratory Protection Program

- Selection and use
- Storage
- Fit testing
- Medical requirements
- Inspection and repair
- Training

Heat and Cold Stress Monitoring and Control Program

- Monitoring requirements
- Prevention and control

Pressure Vessel and Pipeline Safety Program

- Line-breaking program
- Equipment inspection and maintenance
- Blocking, bleeding, and blanking
- Training

8.7.3.2 Operations Health and Safety Program

Once the plant has been constructed, a Health and Safety Program will be developed to cover the hazards associated with plant operations. This program will include pertinent information on the hazards associated with operating and maintaining the plant, appropriate control measures, and will define what procedures need to be implemented in order to be in compliance with the LORS listed in Table 8.7-6. The primary components of the Operations Health and Safety Program will include the following: Injury and Illness Prevention Program, Fire Protection and Prevention Program, Emergency Action Program, Personal Protective Equipment Program, and a general Plant Operations Safety Program.

Additional components of this program that will be implemented as required are included in Table 8.7-2. Pertinent information from applicable consensus standards will also be included in the Operations Safety Program as outlined in Table 8.7-8, and permits will be obtained as described in Table 8.7-9.

8.7.3.2.1 Injury and Illness Prevention Program

- Personnel with the responsibility and authority for implementing the plan
- Safety and health policy
- Work rules and safe work practices
- System for ensuring that employees comply with safe work practices
- Employee communications
- Identification and evaluation of workplace hazards
- Methods and / or procedures for correcting unsafe or unhealthy conditions, work practices, and work procedures in a timely manner based on the severity of the hazards
- Specific safety procedures (See Plant Operation Safety Program)
- Training and instruction

8.7.3.2.2 Fire Protection and Prevention Program

- General requirements
- Fire hazard inventory, including ignition sources and mitigation
- Housekeeping and proper materials storage
- Employee alarm / communication system
- Portable fire extinguishers
- Fixed firefighting equipment
- Fire control
- Flammable and combustible liquid storage
- Use of flammable and combustible liquids
- Dispensing and disposal of liquids
- Training
- Personnel to contact for information on plan contents

8.7.3.2.3 Emergency Action Program/Plan (Part of the Risk Management Plan)

- Emergency escape procedures and emergency escape route assignments
- Procedures to be followed by employees who remain to operate critical plant operations before they evacuate
- Procedures to account for all employees after emergency evacuation has been completed
- Rescue and medical duties for those employees performing rescue and medical duties
- Fire and emergency reporting procedures
- Alarm and communication system
- Personnel to contact for information on plan contents
- Response procedure for ammonia release
- Training requirements

8.7.3.2.4 Personal Protective Equipment Program

- Hazard analysis and prescription of PPE
- Personal protective devices
- Head protection
- Eye and face protection
- Body protection
- Hand protection
- Foot protection
- Skin Protection
- Sanitation
- Safety belts and life lines for fall protection
- Protection for electric shock
- Medical services and first aid / bloodborne pathogens
- Respiratory protective equipment
- Hearing protection
- Training

8.7.3.2.5 Plant Operation Safety Program

Motor Vehicle and Heavy Equipment Safety Program

- Operation and Maintenance of Vehicles
- Inspection
- Personal Protective Equipment
- Training

Forklift Operation Program

- Trained and certified operators
- Fueling operations
- Safe operating parameters
- Training

Excavation / Trenching Program

- Shoring, sloping, and benching requirements
- Cal / OSHA permit requirements
- Inspection
- Air monitoring
- Access and egress

Fall Protection Program

- Evaluation of fall hazards
- Protection devices
- Training

Scaffolding / Ladder Safety Program

- Construction and inspection of equipment
- Proper use
- Training

Articulating Boom Platforms Program

- Inspection of equipment
- Load ratings
- Safe operating parameters
- Operator training

Crane and Material Handling Program

- Certified and licensed operators
- Inspection of equipment
- Load ratings
- Safe operating parameters
- Training

Hot Work Safety Program

- Welding and cutting procedures
- Fire watch
- Hot work permit
- PPE
- Training

Employee Exposure Monitoring Program

- Exposure evaluation
- Monitoring requirements
- Reporting of results
- Medical surveillance
- Training

Electrical Safety Program

- Grounding procedure
- LO/TO procedures
- Overhead and underground utilities
- Utility clearance
- Training

Permit-Required Confined Space Entry Program

- Air monitoring and ventilation requirements
- Rescue procedures
- LO/TO and blocking, blinding, and blanking requirements
- Permit completion
- Training

Hand and Portable Power Tool Safety Program

- Guarding and proper operation
- Training

Housekeeping and Material Handling and Storage Program

- Storage requirements

- Walkways and work surfaces
- Equipment handling requirements
- Training

Hearing Conservation Program

- Identifying high-noise environments
- Exposure monitoring
- Medical surveillance requirements
- Hearing protective devices
- Training

Back Injury Prevention Program

- Proper lifting and material handling procedures
- Training

Hazard Communication Program

- Labeling requirements
- Storage and handling
- MSDS
- Chemical inventory
- Training

Respiratory Protection Program

- Selection and use
- Storage
- Fit testing
- Medical requirements
- Inspection and repair
- Training

Heat and Cold Stress Monitoring and Control Program

- Monitoring requirements
- Prevention and control

Pressure Vessel and Pipeline Safety Program

- Line-breaking policy
- Equipment inspection and maintenance
- Blocking, bleeding, and blanking
- Communication
- Training

Safe Driving Program

- Inspection and maintenance
- Training

8.7.4 Safety Training Programs

To ensure that employees recognize and understand how to protect themselves from potential hazards during this project, comprehensive training programs for construction and operation will be implemented as indicated in Tables 8.7-3 and 8.7-4.

TABLE 8.7-3
Construction Training Program

Training Course	Target Employees
Injury and Illness Prevention Training	All
Emergency Action Program/Plan	All
Personal Protective Equipment Training	All
Motor Vehicle and Heavy Equipment Safety Training	Employees working on, near, or with heavy equipment or vehicles
Forklift Operation Training	Employees operating forklifts
Excavation/Trenching Safety Training	Employees involved with trenching or excavation
Fall Protection Training	Employees working at heights greater than 6 feet or required to use fall protection
Scaffolding/Ladder Safety Training	Employees required to erect or use scaffolding
Crane Safety Training	Employees supervising or performing crane operations
Fire Protection and Prevention Training	Employees responsible for the handling and storage of flammable or combustible liquids or gases
Hazard Communication Training	Employees handling or working with hazardous materials
Hot Work Safety Training	Employees performing hot work
Fire Prevention and Protection Training	Employees performing hot work
Electrical Safety Training	Employees performing LO/TO or working on systems that require LO/TO activities
Electrical Safety Training	Employees required to work on electrical systems and equipment, or use electrical equipment and cords
Permit-Required Confined Space Entry Training	Employees required to supervise or perform confined space entry activities
Hand and Portable Power Tool Safety Training	Employees that will be operating hand and portable power tools
Heat Stress and Cold Stress Safety Training	Employees that are exposed to temperature extremes
Hearing Conservation Training	All
Back Injury Prevention Training	All
Safe Driving Training	Employees supervising or driving motor vehicles
Pressure Vessel and Pipeline Safety Training	Employees supervising or working on pressurized systems or equipment
Respiratory Protection Training	All employees required to wear respiratory protection
Fire Protection and Prevention Training	All

TABLE 8.7-4
Operations Training Program

Training Course	Target Employees
Injury and Illness Prevention Training	All
Emergency Action Plan	All
Personal Protective Equipment Training	All
Excavation/Trenching Safety Training	Employees involved with trenching or excavation
Scaffolding/Ladder Safety Training	Employees required to erect or use scaffolding
Fall Protection Training	Employees required to use fall protection
Forklift Operator Training	Employees operating forklifts
Crane Safety Training	Employees supervising or performing crane operations
Fire Protection and Prevention Training	Employees responsible for the handling and storage of flammable or combustible liquids or gasses
Hot Work Safety Training	Employees performing hot work
Electrical Safety Training	Employees performing LO/TO
Electrical Safety	Employees required to work on electrical systems and equipment
Permit-Required Confined Space Entry	Employees required to supervise or perform confined space entry
Hand and Portable Power Tool Safety Training	Employees that will be operating hand and portable power tools
Heat Stress and Cold Stress Safety Training	Employees exposed to temperature extremes
Hearing Conservation Training	All
Back Injury Prevention Training	All
Safe Driving Training	Employees supervising or driving motor vehicles
Hazard Communication Training	Employees handling or working around hazardous materials
Pressure Vessel and Pipeline Safety Training	Employees supervising or working on pressurized systems or equipment
Respiratory Protection Program	All employees required to wear respiratory protection
Fire Protection and Prevention Training	All

As described above, each safety procedure developed to control and mitigate potential site hazards will require some form of training. Training will be delivered in various ways, depending on the requirements of California Occupational Safety and Health Administration (Cal-OSHA) standards, the complexity of the topic, the characteristics of the workforce, and the degree of risk associated with each of the identified hazards.

Table 8.7-3 and 8.7-4 summarize the safety training programs that may be appropriate for personnel placing and demobilizing turbine related equipment, and during the operations and maintenance of this equipment.

8.7.5 Fire Protection

The site is located within the City of San Jose and the County of Santa Clara. External fire fighting services will be provided by the City of San Jose. The closest fire station (San Jose Station No. 29) is at 199 Innovation Drive, approximately two miles away.

8.7.6 Laws, Ordinances, Regulations, and Standards

Equipment placement and operation and maintenance activities will be conducted in accordance with all applicable LORS. Tables 8.7-5 through 8.7-8 summarize the LORS relating to worker health and safety on this project.

TABLE 8.7-5
Federal Laws, Ordinances, Regulations, and Standards

Law, Ordinance, Regulation, or Standard	Applicability
Title 29 Code of Federal Regulations (CFR) Part 1910[a]	Contains the minimum occupational safety and health standards for general industry in the United States
Title 29 CFR Part 1926[a]	Contains the minimum occupational safety and health standards for the construction industry in the United States

[a] Primary laws and regulations governing worker health and safety in California are provided in Table 8.7-6. These regulations are for reference and apply as referenced by California occupational safety and health regulations. Where a particular situation is not addressed by those regulations, the CFR will be consulted for guidance.

8.7.7 Permitting Agencies, Contacts, and Schedule

Table 8.7-9 lists applicable permits related to the protection of worker health and safety for project certification. The activities covered and application requirements to obtain each permit are provided.

All permits noted in Table 8.7-9 may be obtained from any Cal-OSHA district or field office as needed. Notification requirements are listed as 24 hours; because the permits may be required at several points in the construction of the plant or during operations, no specific permitting schedule is provided.

TABLE 8.7-6
State Laws, Ordinances, Regulations, and Standards

Law, Ordinance, Regulation, or Standard	Applicability
California Occupational Safety and Health Act, 1970	Establishes minimum safety and health standards for construction and general industry operations in California
8 California Code of Regulations (CCR) 339	Requires list of hazardous chemicals relating to the Hazardous Substance Information and Training Act
8 CCR 450	Addresses hazards associated with pressurized vessels
8 CCR 750	Addresses hazards associated with high-pressure steam
8 CCR 1509	Addresses requirements for construction, accident, and prevention plans
8 CCR 1509, et seq., and 1684, et seq.	Addresses construction hazards, including head, hand, and foot injuries and noise and electrical shock

TABLE 8.7-6
State Laws, Ordinances, Regulations, and Standards

Law, Ordinance, Regulation, or Standard	Applicability
8 CCR 1528, et seq., and 3380, et seq.	Requirements for PPE
8 CCR 1597, et seq., and 1590, et seq.	Requirements addressing the hazards associated with traffic accidents and earth-moving
8 CCR 1604, et seq.	Requirements for construction hoist equipment
8 CCR 1620, et seq., and 1723, et seq.	Addresses miscellaneous hazards
8 CCR 1709, et seq.	Requirements for steel reinforcing, concrete pouring, and structural steel erection operations
8 CCR 1920, et seq.	Requirements for fire protection systems
8 CCR 2300, et seq., and 2320, et seq.	Requirements for addressing low-voltage electrical hazards
8 CCR 2395, et seq.	Addresses electrical installation requirements
8 CCR 2700, et seq.	Addresses high-voltage electrical hazards
8 CCR 3200, et seq., and 5139, et seq.	Requirements for control of hazardous substances
8 CCR 3203, et seq.	Requirements for operational accident prevention programs
8 CCR 3270, et seq., and 3209, et seq.	Requirements for evacuation plans and procedures
8 CCR 3301, et seq.	Requirements for addressing miscellaneous hazards, including hot pipes, hot surfaces, compressed air systems, relief valves, enclosed areas containing flammable or hazardous materials, rotation equipment, pipelines, and vehicle-loading dock operations.
8 CCR 3360, et seq.	Addresses requirements for sanitary conditions
8 CCR 3511, et seq., and 3555, et seq.	Requirements for addressing hazards associated with stationary engines, compressors, and portable, pneumatic, and electrically powered tools
8 CCR 3649, et seq., and 3700, et seq.	Requirements for addressing hazards associated with field vehicles
8 CCR 3940, et seq.	Requirements for addressing hazards associated with power transmission, compressed air, and gas equipment
8 CCR 5109, et seq.	Requirements for addressing construction accident and prevention programs
8 CCR 5139, et seq.	Requirements for addressing hazards associated with welding, sandblasting, grinding, and spray-coating
8 CCR 5150, et seq.	Requirements for confined space entry
8 CCR 5160, et seq.	Requirements for addressing hot, flammable, poisonous, corrosive, and irritant substances
8 CCR 5192, et seq.	Requirements for conducting emergency response operations
8 CCR 5194, et seq.	Requirements for employee exposure to dusts, fumes, mists, vapors, and gases
8 CCR 5405, et seq.; 5426, et seq.; 5465, et seq.; 5500, et seq.; 5521, et seq.; 5545, et seq.; 5554, et seq.; 5565, et seq.; 5583, et seq.; and 5606, et seq.	Requirements for flammable liquids, gases, and vapors

TABLE 8.7-6
State Laws, Ordinances, Regulations, and Standards

Law, Ordinance, Regulation, or Standard	Applicability
8 CCR 5583, et seq.	Requirements for design, construction, and installation of venting, diking, valving, and supports
8 CCR 6150, et seq.; 6151, et seq.; 6165, et seq.; 6170, et seq.; and 6175, et seq.	Provides fire protection requirements
24 CCR 3 et seq.	Incorporates current addition of Uniform Building Code
8 CCR, Part 6	Provides health and safety requirements for working with tanks and boilers
La Follette Bill (Health and Safety Code Section 25500, et seq.)	Requires that every new or modified facility that handles, treats, stores, or disposes of more than the threshold quantity of any of the listed acutely hazardous materials prepare and maintain an RMP
Health and Safety Code Sections 25500 through 25541	Requires the preparation of a Hazardous Material Business Plan that details emergency response plans for a hazardous materials emergency at the facility

TABLE 8.7-7
Local Laws, Ordinances, Regulations, and Standards

Law, Ordinance, Regulation, or Standard	Applicability
Required by Santa Clara County and San Jose:	
• Specific hazardous material handling requirements	Provides response agencies with necessary information to address emergencies
• Emergency Response Plan	Allows response agency to integrate emergency response activities into any response actions
• Business Plan	Provides response agency with overview of project purpose and operations
• Risk Management Plan (CUPA, administered by the County)	Provides response agency with detailed review of risks and hazards located at the project site and mitigation implemented to control risks or hazards

TABLE 8.7-8
Applicable National Consensus Standard

Law, Ordinance, Regulation, or Standard	Applicability
Uniform Fire Code, Article 80	Addresses the prevention, control and mitigation of dangerous conditions related to storage, dispensing, use, and handling of hazardous materials and information needed by emergency response personnel
National Fire Protection Association (NFPA) 10, Standard for Portable Fire Extinguishers	Requirements for selection, placement, inspection, maintenance, and employee training for portable fire extinguishers
NFPA 11, Standard for Low Expansion Foam and Combined Agent Systems	Requirements for installation and use of low-expansion foam and combined agent systems
NFPA 11A, Standard for Medium and High Expansion Foam Systems	Requirements for installation and use of medium- and high-expansion foam systems
NFPA 12, Standard on Carbon Dioxide Extinguishing Systems	Requirements for installation and use of carbon dioxide extinguishing systems
NFPA 13, Standard for Installation of Sprinkler Systems	Guidelines for selection and installation of fire sprinkler systems
NFPA 13A, Recommended Practice for the Inspection, Testing and Maintenance of Sprinkler Systems	Guidance for inspection, testing, and maintenance of sprinkler systems
NFPA 14, Standard for the Installation of Standpipe and Hose Systems	Guidelines for selection and installation of standpipe and hose systems
NFPA 15, Standard for Water Spray Fixed Systems	Guidelines for selection and installation of water spray fixed systems
NFPA 17, Standard for Dry Chemical Extinguishing Systems	Guidance for selection and use of dry chemical extinguishing systems
NFPA 20, Standard for the Installation of Centrifugal Fire Pumps	Guidance for selection and installation of centrifugal fire pumps
NFPA 22, Standard for Water Tanks for Private Fire Protection	Requirements for water tanks for private fire protection
NFPA 24, Standard for the Installation of Private Fire Service Mains and Their Appurtenances	Requirements for private fire service mains and their appurtenances
NFPA 26, Recommended Practice for the Supervision of Valves Controlling Water Supplies	Supervision guidance for valves controlling water supplies
NFPA 30, Flammable and Combustible Liquid Code	Requirements for storage and use of flammable and combustible liquids
NFPA 37, Standard for the Installation and Use of Stationary Combustion Engines and Gas Turbines	Fire protection requirements for installation and use of combustion engines and gas turbines
NFPA 50A, Standard for Gaseous Hydrogen Systems at Consumer Sites	Fire protection requirements for hydrogen systems
NFPA 54, National Fuel Gas Code	Fire protection requirements for use of fuel gases
NFPA 59A, Standard for the Storage and Handling of Liquefied Petroleum Gases	Requirements for storage and handling of liquefied petroleum gases
NFPA 68, Guide for Explosion Venting	Guidance in design of facilities for explosion venting
NFPA 70, National Electric Code	Guidance on safe selection and design, installation, maintenance, and construction of electrical systems

TABLE 8.7-8
Applicable National Consensus Standard

Law, Ordinance, Regulation, or Standard	Applicability
NFPA 70B, Recommended Practice for Electrical Equipment Maintenance	Guidance on electrical equipment maintenance
NFPA 70E, Standard for Electrical Safety Requirements for Employee Workplaces	Employee safety requirements for working with electrical equipment
NFPA 71, Standard for the Installation, Maintenance, and Use of Central Station Signaling Systems	Requirements for installation, maintenance, and use of central station signaling systems
NFPA 72A, Standard for the Installation, Maintenance and Use of Local Protective Signaling Systems for Guard's Tour, Fire Alarm and Supervisory Service	Requirements for installation, maintenance, and use of local protective signaling systems
NFPA 72E, Standard on Automatic Fire Detection	Requirements for automatic fire detection
NFPA 72F, Standard for the Installation, Maintenance and Use of Emergency Voice/Alarm of Communication Systems	Requirements for installation, maintenance, and use of emergency and alarm communications systems
NFPA 72H, Guide for Testing Procedures for Local, Auxiliary, Remote Station and Proprietary Protective Signaling Systems	Testing procedures for types of signaling systems anticipated for facility
NFPA 75, Standard for the Protection of Electronic Computer/Data Processing Equipment	Requirements for fire protection systems used to protect computer systems
NFPA 78, Lightning Protection Code	Lightning protection requirements
NFPA 80, Standard for Fire Doors and Windows	Requirements for fire doors and windows
NFPA 90A, Standard for the Installation of Air Conditioning and Ventilating Systems	Requirements for installation of air conditioning and ventilating systems
NFPA 101, Code for Safety to Life from Fire in Buildings and Structures	Requirements for design of means of exiting the facility
NFPA 291, Recommended Practice for Fire Flow Testing and Marking of Hydrants	Guidelines for testing and marking of fire hydrants
NFPA 850, Recommended Practice for Fire Protection for Fossil Fuel Steam Electric Generating Plants	Requirements for fire protection in fossil-fuel steam electric generating plants
NFPA 1961, Standard for Fire Hose	Specifications for fire hoses
NFPA 1962, Standard for the Care, Maintenance, and Use of Fire Hose Including Connections and Nozzles	Requirements for care, maintenance, and use of fire hose
NFPA 1963, Standard for Screw Threads and Gaskets for Fire Hose Connections	Specifications for fire hose connections
American National Standards Institute/American Society for Mechanical Engineers (ANSI/ASME), Boiler and Pressure Vessel Code	Specifications and requirements for pressure vessels
ANSI, B31.2, Fuel Gas Piping	Specifications and requirements for fuel gas piping

TABLE 8.7-9
Health and Safety Permits

Permit	Issuing Agency	Application Requirements	Permit Procurement
Trenching and excavation permit	Any Cal-OSHA district or field office	Required for the following: • Trenches and excavations of more than 5 feet that personnel are required to enter • Construction of buildings, structures, scaffolding, or falsework more than 3 stories high • Demolition of any building or structure or dismantling of scaffolding or falsework more than 3 stories high	Submit completed permit application to any Cal-OSHA district or field office prior to commencing construction
Permit for the erection of a fixed tower crane	Any Cal-OSHA district or field office	Required for the erection, climbing, or dismantling of fixed tower cranes Notifications to Cal-OSHA must be made at least 24 hours prior to the initiation of the following activities: • Completion of erection and commencement of operation • Climbing of the tower crane • Dismantling of the tower crane	Submit completed permit application to any Cal-OSHA district or field office

8.7.8 Agency Contacts

Agency contacts relative to worker health and safety for the project are shown in Table 8.7-10.

TABLE 8.7-10
Agency Contacts

Agency	Contact	Title	Telephone
City of San Jose	Dr. Frances E. Winslow	Director of the Office of Emergency Services	408/277-4595
Santa Clara County Environmental Health Department	Barbara Chavez	Hazardous Materials Specialist (notify in the event of a spill or hazardous materials release)	408/299-6930
Cal-OSHA – San Francisco District Office	John Tennison	Area Manager	415/972-8545
Cal-OSHA – Local San Jose Office, 2010 N. First Street, Suite 401, San Jose	Duty Officer	Duty Officer	408/452-7288

8.8 Socioeconomics

8.8.1 Introduction

The City of San Jose prepared and certified an EIR for the proposed U.S. DataPort Planned Development Zoning in San Jose, California. As a part of the approval the City Council challenged the developer to redesign the project to reduce/eliminate the use of diesel backup generators. This LECEF project is the result of that effort. Since an EIR was prepared by the City of San Jose for the original project, and since the redesigned power plant portion of the U.S. DataPort project now falls under the jurisdiction of the CEC, this AFC tiers off that EIR in accordance with the recommendations of CEQA. Unfortunately, that EIR did not address Socioeconomic impacts, with the exception of Utilities and Service Systems. However, the utility impacts described in the EIR are addressed in this AFC under the affected disciplines (e.g., biological resources, cultural resources, etc.)

Therefore, this section presents a socioeconomic analysis of the proposed project.

8.8.2 Affected Environment

This section discusses the environmental setting, consequences, regional and local impacts, and mitigation measures associated with the socioeconomic aspects of the project. For purposes of this evaluation, the regional area for demographics is defined as Santa Clara County, which comprises the San Jose Metropolitan Statistical Area (MSA). The City of San Jose is used for all other information (public services and utilities), because the site is being annexed into the City of San Jose and is in the San Jose Urban Service Area. Socioeconomic issues relevant to the existing environment include population, employment, economic base and fiscal resources, housing, schools, and public services and utilities.

The project site is located in Santa Clara County, in the Alviso area of northern San Jose, north of SR 237, and east of Zanker Road. (Figure 1.1-1). Land use in the surrounding area (discussed in detail in Sections 8.4 and 8.9) includes a wastewater treatment plant and buffer area to the north and west of the site, SR 237 to the south, and Coyote Creek to the west. Also in the immediate vicinity are a bus yard, a mobile home park, a wildlife refuge and agriculture and industrial uses. There are no sensitive receptor facilities (such as schools, daycare facilities, convalescent centers, or hospitals) in close proximity of the project site. The nearest residential areas are located approximately 0.6 mile southwest, 0.8 mile east, and 1.4 miles southeast of the center of the project site.

Section 8.8.2 describes the environment that may be affected by project construction and operation. Section 8.8.3 identifies socioeconomic impacts from development of the Facility, and Section 8.8.4 discusses cumulative impacts. Environmental Justice is discussed in Section 8.8.5. Mitigation measures are discussed in Section 8.8.6. Section 8.8.7 presents the LORs applicable to socioeconomics. Section 8.8.8 describes the agencies involved and provides agency contacts. Section 8.8.9 presents the required permits and permitting schedule. Section 8.8.10 provides references used in the development of this section.

8.8.2.1 Population

Santa Clara County is located in the California's San Francisco Bay area. Located in the South Bay, the county is highly urbanized. Incorporated cities in Santa Clara County include Campbell, Cupertino, Gilroy, Los Altos, Los Altos Hills, Los Gatos, Milpitas, Monte Sereno Morgan Hill, Mountain View, Palo Alto, Santa Clara, Saratoga, Sunnyvale, and San Jose.

Historical population data for Santa Clara County and San Jose are summarized in Table 8.8-1. Annual average compounded population growth rates are summarized in Table 8.8-2. In 1995, Santa Clara County had a population of approximately 1.6 million persons. Over half (55 percent) of that population reside in San Jose. San Jose is the eleventh largest city in the United States and the third largest in California (San Jose Chamber of Commerce, 1999).

The decade from 1980 to 1990 was a period of explosive growth for California. The Bay Area also experienced large population increases during this period (Association of Bay Area Governments [ABAG], 1995), which only decreased slightly in the following 5-year period from 1990 to 1995. The regional population growth in the future is expected to stabilize as the area becomes more built out. During the 1990 to 1995 period, the City of San Jose's population growth rate doubled over the prior 10-year average, slowing dramatically over the last half of the decade. Over the next 10 years, population in the Bay Area is expected to be home to more than 7 million people, an 8 percent increase over 2000 population levels. This growth is expected to come from increases in births and life expectancy rather than in-migration (ABAG, 2000).

TABLE 8.8-1
Historical and Projected Populations

Area	1980	1990	1995	2000	2010 (p)	2015 (p)
City of San Jose	690,100	782,248	888,800	894,943	1,031,600	1,048,900
San Jose MSA/ Santa Clara County	1,295,100	1,497,600	1,594,800	1,682,585	1,844,300	1,880,650
Nine-County Bay Area	5,179,800	6,020,147	6,382,000	6,783,760	7,374,250	7,548,950
California	23,668,000	29,760,000	31,910,000	33,872,000	39,958,000	N/A

Sources: ABAG, 1995 & 2000; California Department of Finance (DOF), 1998, 2000 & 2001

(p) projected

TABLE 8.8-2
Historical and Projected Annual Compounded Population Growth Rates

Area	1980-1990	1990-1995	1995-2000	2000-2010 (p)	2010-2015 (p)
City of San Jose	1.26%	2.59%	0.14%	1.43%	0.33%
San Jose MSA/ Santa Clara County	1.46%	1.27%	1.08%	0.92%	0.39%
Nine-County Bay Area	1.51%	1.17%	1.23%	0.84%	0.47%
California	2.31%	1.40%	1.20%	1.67%	N/A

(p) projected

Historically, Santa Clara County's ethnic composition has had a Caucasian majority. In 1996, Caucasians accounted for 52 percent of the population. Asians or Pacific Islanders (21 percent) and persons of Hispanic origin (23 percent) were also well represented. African Americans constituted only 4 percent of the population (DOF, 1999). Based on 2000 Census data, the County's Caucasian population dropped to 44.2 percent of the total population, followed by Asians at 25.4 percent and Hispanics at 24.0 percent. Those of two or more races comprised 3.0 percent of the population, followed by Blacks at 2.6 percent, with Pacific Islanders and American Indians, both at 0.3 percent and Other at 0.2 percent (DOF 2001).

San Jose's ethnic composition has also changed during the past decade. According to the 2000 Census data, Caucasians were the largest group comprising 36.0 percent, followed by Hispanics at 30.2 percent, and Asians at 26.6 percent. Blacks comprise only 3.3 percent, followed by those of two or more races at 3.0 percent, with Pacific Islanders at 0.4 percent, American Indians at 0.3 percent, and Others at 0.2 percent.

8.8.2.2 Housing

As shown in Table 8.8-3, the January 1, 2000, total housing stock for the San Jose MSA was 589,010 units. Single family homes accounted for 375,919 units, multiple family dwellings accounted for 192,473 units, and mobile homes accounted for 20,618 units. New housing authorizations for the San Jose MSA in 1999 totaled 7,010 units; they were split between single family units (3,333) and multi-family units (3,677). These authorizations were valued at $1.306 billion. In December 2000, the median home price was $460,000; a $100,000 increase over the prior year. Although the San Jose MSA's vacancy rate increased slightly between 1990 and 2000 (from 3.7 percent to 3.9 percent), the housing shortage in the area is still a significant issue. In addition, the 2000 figure is less than the federal housing standard of 5 percent; this also indicates a short supply of housing in the San Jose MSA. (DOF, 2001)

TABLE 8.8-3
Selected Housing Data for Santa Clara County

	1990	1997	1998	1999	2000
Housing Stock[1]	540,240	N/A	573,593	N/A	589,010
Vacancy Rate[1]	3.7%	N/A	3.9%	N/A	3.9%
Median Home Prices[2]	N/A	$272,000	$295,000	$360,000	$460,000
Annual Growth in Housing Prices	N/A	N/A	8.5%	22.0%	27.8%

Source: Santa Clara County Profile, DOF (1999, 2001)
Notes:
[1] As of January each year.
[2] As of November in 1997 and 1998; and December 1999 and 2000.
N/A = not available

Housing stock for San Jose as of January 1, 2000, was 287,506 units. Single family homes accounted for 188,312 units, multiple family dwellings accounted for 87,525 units, and mobile homes accounted for 11,669 units. San Jose's vacancy rate was 3.53 percent in 2000, which is also less than the federal housing standard of 5 percent (DOF, 2001).

Although San Jose issued permits for 5,710 units between January 1996 and June 1997 (ABAG, 1999), which is the highest number of any city in the Bay Area, the city and the MSA are still struggling with a housing shortage. By 2020, the San Jose MSA is projected to gain 50 percent more jobs but only 20 percent more housing units (ABAG, 1999).

8.8.2.3 Economy and Employment

The San Jose MSA economy is based on (in order of importance): services, manufacturing, and retail trade (see Table 8.8-4). High technology jobs are projected to continue to drive the San Jose MSA's economy (ABAG, 1995). Multimedia, networking, and other new types of high technology companies will continue to locate in the valley to have access to the technological and business community that has nurtured high technology businesses in the past.

Between 1995 and 2000, employment in the San Jose MSA increased by 194,100 jobs. Construction led the expansion with an average annual compounded growth rate of 11.2 percent and an increase of 20,000 jobs. In absolute numbers, the Services section had the largest increase with 99,200 additional employees between 1995 and 2000. This sector comprises over one-third of the total employment. However, its average annual growth rate was only 6.6 percent. The Manufacturing sector increased by 29,000 jobs during the 5-year period and experienced an average annual growth rate of 2.4 percent.

TABLE 8.8-4
Employment Distribution in the San Jose MSA, 1995 and 2000

	1995		2000			1995-2000
Industry	Number of Employees[a]	Employment Share	Number of Employees[b]	Employment Share	Percentage Change	Average Annual Compound Growth Rate
Agriculture, Mining	4,600	0.5%	5,500	0.5%	19.6%	3.6%
Construction	28,700	3.4%	48,700	4.7%	69.7%	11.2%
Manufacturing	231,200	27.6%	260,200	25.2%	12.5%	2.4%
Transportation, Utilities	24,000	2.9%	29,100	2.8%	21.3%	3.9%
Wholesale trade	48,700	5.8%	56,400	5.5%	15.8%	3.0%
Retail trade	117,400	14.0%	139,300	13.5%	18.7%	3.5%
Finance, Insurance and Real Estate	28,700	3.4%	32,100	3.1%	11.8%	2.3%
Services	265,300	31.7%	364,500	35.4%	37.4%	6.6%
Government	87,800	10.5%	94,700	9.2%	7.9%	1.5%
Total Employment	836,400	100.0%	1,030,500	100.0%	23.2%	4.3%

Sources:
a: ABAG, 1995
b: California CEDD, 1999

Table 8.8-5 provides more detail on the characteristics of the San Jose MSA labor force. It shows employment data for the San Jose MSA and for San Jose in relation to California. Over half (50.7 percent) of the San Jose MSA's labor force lives in San Jose, while 60 percent of the San Jose MSA's unemployed laborers reside there. However, the MSA's unemployment rate (2.0 percent) is well-below California's unemployment rate (4.9 percent), with only 19,900 people unemployed. California does not forecast unemployment rates, so no future forecast is available.

TABLE 8.8-5
San Jose MSA Employment Data, 2000 (average)

Area	Labor Force	Employment	Unemployment	Unemployment Rate
San Jose	509,300	497,360	11,940	2.3%
San Jose MSA	1,003,900	984,000	19,900	2.0%
California	17,090,800	16,245,600	845,200	4.9%

Source: CEDD, 2001

Available skilled labor in Santa Clara County was evaluated by surveying local labor unions (Table 8.8-6) and contacting the California Employment Development Department (CEDD) (Table 8.8-7). Both sources show that the workforce in the county will be adequate to fulfill the project's labor requirements for construction. Although there may be some concern with the number of power plants being proposed in the state, the construction workforce for this project is relatively small and the duration is short. Because the labor requirements are small and the construction labor force of the south Bay Area is large, it is expected that most of the construction labor force will be drawn from the local area and will commute daily less than 30 miles each way to reach the job site. In addition, as shown in Table 8.8-7, the construction workforce within the San Jose MSA has been growing at an average annual rate of 11.2 percent per year.

TABLE 8.8-6
Labor Union Contacts

Labor Union	Contact	Phone Number
IBEW Local No. 332	Julie McCarthy	408/294-4906
Cement Masons Union Local 400	Hector Cartez	408/266-9160
Millwrights Local Union 102	Ed Gable	510/635-0323
Operating Engineers Union Local No. 3	Joe Morrison	408/295-8788

TABLE 8.8-7
Available Labor by Skill in Santa Clara County, 1997 to 2004

Occupational Title	Annual Averages		Absolute Change	Percentage Change	Average Annual Compounded Growth Rate
	1997	2004			
Construction Mangers	1,290	1,890	600	46.5%	5.6%
Surveying and Mapping Scientists	120	150	30	25.0%	3.2%
Carpenters	6,010	8,220	2,210	36.8%	4.6%
Electricians	4,280	5,930	1,650	38.6%	4.8%
Plumbers and pipefitters	3,080	4,150	1,070	34.7%	4.4%
Pipelayers	100	140	40	40.0%	4.9%
Sheet metal duct installers	370	550	180	48.6%	5.8%
Welders and cutters	1,110	1,340	230	20.7%	2.7%
Truck drivers, heavy	4,640	5,300	660	14.2%	1.9%
Helpers, laborers	28,850	38,550	9,700	33.6%	4.2%

Source: CEDD, 2000
Employment and projections contained in these tables are considered estimates.

8.8.2.4 Fiscal Resources

The local agencies with taxing power include Santa Clara County and the City of San Jose. Santa Clara County is the center for the development of high technology products. California's DOF named the county as having the strongest economy in the state (Santa Clara County Office of Education [SCCOE], 1999). For FY 2000, Santa Clara County's Board of Supervisors approved an annual budget of $2.29 billion. The FY 2001 appropriations (as of 4/3/2001) were $2.89 billion. Due to the uncertainty in the economy, the County is proposing a FY 2002 budget of $3.19 billion. The funding categories generally include the following county programs:

- Special Programs and Reserves: Medical Care Financing, Criminal Justice System, Re-budgeted Items
- Legislative and Executive: Board of Supervisors, County Clerk, County Executive, Assessor, County Counsel
- General Services Agency: Data Processing, Systems Planning, User Training, Communications, Emergency Preparedness, Administrative Management, Registrar of Voters, Facilities Operations
- Health and Hospital System: Santa Clara County Medical Center, Emergency Services, Disease Control, Public Health, Mental Health, Children's Center, Alcohol and Drug Services
- Social Services Agency: Administration, Nutrition Services, Welfare
- Law and Justice Departments: Child support, Criminal Units and Crime Laboratory, Public Defender, Conflicts Administration, Municipal Court, Office of the Sheriff, Department of Corrections, Probation Department
- Finance Agency: Controller, Treasurer
- Fire Districts
- Environmental Resources Agency: Housing and Community Development, Planning and Development/Agriculture, Department of Environmental Health, Parks and Recreation
- Employee Services Agency: Human resources, Labor Relations, Occupational Safety and Environmental Compliance, Risk Management
- Roads and Airports

Table 8.8-8 shows how the revenue sources and how the funds were allocated among the different departments.

TABLE 8.8-8
Santa Clara County Budget Appropriations for FY 2000, FY 2001 and FY 2002 Recommendations ($ 000s)

Expenditures by Agency	FY 2000 (Actual)	FY 2001 Appropriations (as of 4/3/01)	FY 2002 Recommended
REVENUES			
Taxes – Current Property	$298,892	$316,878	$351,768
Taxes – Other than Current Property	$185,293	$181,910	$188,467
Licenses, Permits, Franchises	$17,894	$17,560	$16,893
Fines, Forfeitures, Penalties	$29,719	$26,109	$26,666

TABLE 8.8-8
Santa Clara County Budget Appropriations for FY 2000, FY 2001 and FY 2002 Recommendations ($ 000s)

Expenditures by Agency	FY 2000 (Actual)	FY 2001 Appropriations (as of 4/3/01)	FY 2002 Recommended
Revenue from Use of Money/Property	$71,065	$72,906	$50,059
Aid from State Government	$604,192	$676,189	$758,902
Aid from Federal Government	$267,757	$360,331	$348,834
Charges for Current Services	$256,125	$269,483	$316,711
Transfers	$285,222	$281,897	$312,183
Other Revenues	$506,713	$461,578	$460,002
Total Revenue	$2,522,870	$2,662,188	$2,830,485
EXPENDITURES			
Special Programs and Reserves	$91,159	$155,901	$184,634
Legislative and Executive	$179,963	$351,342	$542,627
General Services Agency	$113,077	$216,972	$146,434
SCV Health and Hospital System	$908,644	$1,002,110	$1,056,817
Social Services Agency	$365,126	$484,195	$516,254
Law and Justice Departments	$394,168	$434,578	$461,868
Environmental Resources Agency	$63,253	$70,500	$78,127
Employee Services Agency	$46,184	$51,964	$71,574
Finance Agency	$49,473	$31,577	$25,092
Roads and Airports	$34,890	$45,387	$55,409
Fire Districts	$48,626	$53,769	$59,985
Total Expenditures	$2,294,563	$2,898,296	$3,198,822

Source: County of Santa Clara, 2001

As shown in Table 8.8-9, San Jose adopted a $501 million general fund budget in FY 2000, a 6.8 percent increase over the prior year. For FY 2000, there was a slight increase in all "Current" categories, with the exception of Sanitation, which received a 3.9 percent budget decrease. The largest budget increase (8.5 percent) went to "Community Services." On the revenue side, San Jose enjoys sales taxes at about twice the level of property tax revenues. Sales taxes are expected to grow 12.1 percent, with property tax revenues expected to increase 9.9 percent.

TABLE 8.8-9
San Jose Revenues and Expenditures by Fund ($ 000s)

	1999	2000
REVENUES		
Taxes		
Property	$64,815	$71,971
Sales	$123,306	$140,307
Utility	$55,067	$53,426
Sate of California in-lieu	$40,715	$45,394
Franchise	$27,479	$30,322
Miscellaneous	$7,290	$8,288

TABLE 8.8-9
San Jose Revenues and Expenditures by Fund ($ 000s)

	1999	2000
Total Taxes	$318,671	$349,707
Licenses, Permits and Fines	$73,919	$75,641
Grants	$6,281	$10,351
Subventions	$13	
Charges for current services	$21,434	$23,967
Interest and other revenue	$51,814	$54,580
TOTAL REVENUE	$472,132	$514,247
EXPENDITURES		
Current		
General government	$36,826	$37,891
Public safety	$238,914	$258,351
Capital maintenance	$26,285	$28,008
Community services	$85,508	$93,478
Sanitation	$1,629	$1,568
Other expenditures	$63,508	$65,943
Capital outlay	$13,179	$13,835
Debt service		
Principal	$1,070	$1,804
Interest	$214	$336
TOTAL EXPENDITURES	$467,288	$501,213
Excess of revenues over expenditures	$11,670	$13,033

Source: City of San Jose, 2001.

8.8.2.5 Education

There are a total of 33 elementary, high school, and unified school districts in Santa Clara County. The project is located in Santa Clara Unified School District. This district contains 23 schools, has a 1999-2000 enrollment of 14,587 students with an average pupil to teacher ratio of 20.7 and an average class size of 27.3. By comparison, Santa Clara County also has an average pupil to teacher ratio of 20.7, but a slightly smaller average class size at 26.7.

Since the construction workforce would be local, the number of workers are few and the construction period is short, an adverse impact to these schools would not occur because workers would not relocate to this area for a construction job of this duration.

8.8.2.6 Public Services

8.8.2.6.1 Law Enforcement

The Santa Clara County Sheriff's Department is headquartered at 1541 Civic Center Drive in Santa Clara. The department handles emergency calls from locations outside of city boundaries. Depending on the magnitude of the emergency, it calls upon the San Jose Police Department for additional assistance, and vice-a-versa.

The San Jose Police Department is headquartered at 201 West Mission Street in northern San Jose. It has 1300 sworn police officers, 429 civilian support personnel, 350 patrol cars, and other vehicles and equipment. The Communications Division, equipped with a state-of-the-art, computer-aided dispatch system, receives and processes 9-1-1 calls for service and coordinates the response of emergency equipment and personnel. The Police Department is separated into 13 districts and has law enforcement responsibility within the city limits. However, police units will respond to calls made from pockets of county areas as necessary. The project site is in the Police Department's "R" District, which covers the northern part of the City. The "R" District is split into five beats, each of which has at least one officer patrolling at all times. Between 9:00 p.m. and 1:00 a.m., up to 10 officers patrol the district. The Police Department generally has a response time of 90 seconds to 4.5 minutes, depending on other incidents in the area (Dalaison 2001).

The plant site is located close to the police district of the City of Milpitas. Officers from Milpitas would provide additional support in terms of day-to-day roving and emergency support (Dalaison, 2001).

The California Highway Patrol (CHP) is the primary law enforcement agency for state highways and roads. Services include law enforcement, traffic control, accident investigation, and the management of hazardous materials spill incidents.

8.8.2.6.2 Fire Protection

The project site is within the San Jose Fire Department's jurisdiction. Station No. 29 on Innovation Dr. near Zanker Road will respond to a call from the project site in approximately 6 to 7 minutes. Station No. 29 is staffed by 1 battalion chief, 3 captains, 11 fire fighters, 1 paramedic, 1 fire engine, 1 fire truck and 1 Haz Mat unit. For a major structural fire, the next fire station to be enlisted would be of Station No. 25, located at 1590 Gold St. in Alviso. Station No. 25 is staffed by 1 captain, 1 paramedic, 2 or 3 fire fighters and one fire engine (King, 2001).

8.8.2.6.3 Emergency Response

In the event of an emergency, plant personnel will defer to a city Hazardous Materials Response Team. For San Jose, the team is the HIT (hazardous incidence team) located at San Jose Fire Station No. 29 in northern San Jose between Highways 101 and 880. Station No. 29 is able to manage all kinds of hazardous materials emergencies, including incidents involving aqueous ammonia (Smith, 1999; King, 2001).

8.8.2.6.4 Hospitals

There are approximately 15 hospitals with emergency rooms in Santa Clara County. The Santa Clara County Medical Center (SCVMC), located at 751 South Bascom Avenue, about 10 miles from the site, is a publicly owned, 394-bed, full-service, primary, secondary, and tertiary care medical facility. It is affiliated with the Stanford University School of Medicine and is a teaching institution. Specialty services at the hospital include: Regional Burn Center; Trauma Center; Rehabilitation Center; High Risk Maternity Program; and Neonatal Intensive Care Center.

The Santa Clara Kaiser Permanente Medical Center is approximately 7.5 miles southwest of the site. It is a full-service, 336-bed hospital with medical offices. More than 300 physicians and a staff of 2,000 provide care for 235,000 area members. The hospital is the Northern California Kaiser referral center for craniofacial and pediatric surgery, plasmapheresis (plasma exchange), and complex pelvic fractures. It also acts as the South Bay Kaiser referral center for neonatology, pediatric intensive care, and high-risk obstetrics.

8.8.2.7 Utilities

8.8.2.7.1 Electricity and Gas

Electrical power and natural gas in the region are provided by PG&E. PG&E's San Mateo Substation is located just south of Bayshore Freeway (Highway 101) and west of the Southern Pacific rail line, in the City of Santa Clara. See Section 2, Project Description, for further details on provision of electric and natural gas services.

8.8.2.7.2 Water

For this project, plant utility water will be supplied by San Jose/Santa Clara WPCP via a 1,000-foot-long pipeline. Plant wastewater and sanitary sewage will be returned to the San Jose/Santa Clara WPCP for treatment and re-use. Potable water supply requirements are expected to be minimal and supplied by truck by a local drinking water supplier and stored onsite. Further information on water supply for the project is found in Section 7, Water Supply.

8.8.2.7.3 Sewer

Plant wastewater and sanitary sewage will be returned to the San Jose/Santa Clara WPCP for treatment and re-use.

8.8.3 Environmental Consequences

8.8.3.1 Potential Environmental Impacts

Local environmental impacts were determined by comparing project demands during construction and operation with the socioeconomic resources of the project area (i.e., the San Jose MSA). A proposed power generating facility could impact employment, population, housing, public services and utilities, and/or schools. Impacts could be felt locally and/or regionally, though most impacts would tend to be more regional than local. Regional consequences were determined by comparing project demands with the socioeconomic resources of Santa Clara County (i.e., San Jose MSA). It is anticipated that the project will not have any significant adverse impacts on the socioeconomic environment, but it will have some minor financial benefits to the community.

8.8.3.2 Significance Criteria

The criteria used in determining the significance of project-related socioeconomic impacts are presented in the California Environmental Quality Act (CEQA) Checklist. Project-related impacts are determined to be significant if they:

- Induce substantial growth or concentration of population
- Displace a large number of people or existing housing
- Result in substantial adverse environmental impacts associated with the provision of utility services
- Result in substantial adverse physical impacts associated with the provision of public services
- Disrupt or divide the physical arrangement of an established community

Other impacts may be significant if they cause substantial change in community interaction patterns, social organization, social structures, or social institutions; substantial conflict with community attitudes, values, or perceptions; or substantial inequities in the distribution of project cost and benefit.

8.8.3.3 Construction Impacts

8.8.3.3.1 Construction Workforce

Construction will take place over approximately 4 to 6 months, beginning in December 2001 and concluding in May 2002. Two construction shifts will be used to expedite the construction. The primary trades will include carpenters, electricians, laborers, millwrights, operators, pipefitters, and others, as presented in Table 8.8-10. Tables 8.8-10 and 8.8-11 estimate construction personnel requirements for the plant (both day and night shifts) and pipeline facilities, respectively. The workforce will require approximately 287 construction personnel for the proposed project (i.e., peak workforce). In addition, construction of the gas and water lines would require an additional 34 workers. Therefore, the peak workforce is expected to be 311 workers in month 3. However, the peak daytime workforce is 199 in month 4. The number of construction personnel are listed by craft in Tables 8.8-10 (for the plant) and 8.8-11 (for the pipeline).

8.8.3.3.3 Housing Impacts

The construction workforce will most likely commute to the project site daily. However, if needed, there are 10,000 to 12,000 hotel / motel rooms in Santa Clara County available to accommodate workers who may choose to commute to the project site on a workweek basis (Bradley, 1999). As a result, construction of the proposed project is not expected to increase the demand for housing.

8.8.3.3.4 Impacts to the Economy

The estimated cost of the project is approximately $120 million. The estimated value of materials and supplies that will be purchased locally is $7.0 million, or about 5.8 percent of the total construction cost. In addition, construction payroll (assuming an average rate of $60 per hour) is expected to be about $15.5 million. The anticipated payroll for workers and cost of materials and supplies during construction will have a slight beneficial impact on the area. Assuming, conservatively, that 60 percent of the construction workforce will live in Santa Clara County, approximately $9.3 million in payroll can be anticipated to stay in the MSA.

This additional expenditure in the community will generate a temporary beneficial impact by creating the potential for other employment opportunities for local workers within Santa Clara County in other areas of service (i.e., transportation, wholesale and retail trades, amusement, and other business services). In addition to the estimated construction payroll, the project could also create minor employment opportunities in the region through local expenditures on construction materials and services. The anticipated payroll for employees, as well as the purchase of materials and supplies during the construction period, will have a slight, but not significant, beneficial impact on the area. This additional injection of funds will cause a temporary beneficial impact by creating the potential for other employment opportunities for local workers in other service areas, such as transportation and retail.

TABLE 8.8-10
Estimated Construction Personnel for Plant and Substation Construction

Month	1	2	3	4	5	Total
Day Shift						
Carpenters	18	14	14	12	8	66
Electricians	14	24	17	16	18	89
Ironworkers	24	22	26	22	20	114
Laborers	20	15	16	15	12	78
Millwrights		10	10	20	24	64
Operating Engineers	12	10	10	12	10	54
Painters					9	19
Pipefitters	35	44	30	33	33	175
Bricklayer/Mason	4	4	2	4	4	18
Surveyor						
Teamster	2	2	2	2	2	10
Supervisors	13	12	12	12	13	62
Total Day Shift	**142**	**157**	**139**	**148**	**153**	**739**
Night Shift						
Carpenters	14	12	8	10	10	54
Electricians	12	13	12	18	20	75
Ironworkers	18	18	12	16	16	80
Laborers	24	20	18	16	15	93
Millwrights		15	15	13	15	58
Operating Engineers	10	10	10	10	11	51
Painters					5	5
Pipefitters	22	30	27	25	25	129
Teamster	2	2	2	2	2	10
Supervisors	7	10	9	9	9	44
Total Night Shift	**109**	**130**	**113**	**119**	**128**	**599**
TOTAL ALL SHIFTS	**251**	**287**	**252**	**267**	**281**	**1338**

TABLE 8.8-11
Construction Personnel Requirements for Pipeline Construction by Type, Month 3

Discipline	Pipe Laying Crew
Water/Gas Line	
Pipefitters	4
Laborers	8
Heavy Equipment Operators	10
Surveyors	4
Teamsters	2
Field Engineers	2
Foremen/Supervisors	4
Total	**34**

8.8.3.3.5. Impacts to Education

The construction of the project will not cause significant population changes or housing impacts on the region. Most construction employees will commute to the site from areas within Santa Clara County, as opposed to relocating to the area. This is especially likely since the construction duration is short, i.e., only 4 to 6 months. As a result, the project's construction will not create any significant adverse impacts on the local school system.

8.8.3.3.6 Impacts to Public Services and Facilities

Project construction will not make significant demands on public services or facilities. The construction phase of the project is pretty similar to typical industrial construction and will not impact police, fire, or hazardous materials handling resources. Such impacts could include potential responses to emergency calls, routine site visits, and site plan approval from the fire department. However, these impacts are not considered significant, and existing resources are adequate to sustain them. Copies of the records of conversation with the Sheriff, Police, Hazardous Material Handling, and Fire departments are included in Appendix 8.8-1.

Hospital capacity in the general vicinity and the rest of the county is sufficient for emergencies that could possibly occur during the project, such as on-site worker injuries. The project's operation and construction is not expected to create significant adverse impacts on medical resources in the area since the workforce is so small.

8.8.3.3.7 Impacts to Utilities

Project construction will not make significant adverse demands on local water, sanitary sewer, telephone, electricity, or natural gas. Impacts would be primarily from the construction workforce. Water for construction would be supplied by the local domestic purveyor and would not be significant given the number of workers (140) and the short duration of construction.

8.8.3.3.8 Fiscal Impacts

The effect on fiscal resources during construction will be from sales taxes realized on equipment and materials purchased in the county. The sales tax rate in Santa Clara County is 8.0 percent. Of this, 5.75 percent goes to the state; 1 percent goes to the place of sale; 0.25 percent goes to the county transportation authority; 0.5 percent goes to the county transit district; and 0.5 percent goes to the county general fund (Nelson, 2001). Local construction expenditures are anticipated to be $7.0 million. Sales taxes on this one-time expenditure would be $560,000. Of this amount, the state would receive $402,500 in sales taxes, $70,000 would be distributed among the places of sale, and Santa Clara County would receive $35,000 to its general fund and $35,000 to the transit district. The sales taxes received from construction would be beneficial, but not significant.

8.8.3.4 Operational Impacts

8.8.3.4.1 Operational Workforce

The proposed facility is expected to begin commercial operation in May 2002. It is expected to employ about 20 full-time employees, with 10 operators, 3maintenance technicians, 2 clerical staff, 1 plant manager, 1 plant engineer, and 1 operations/maintenance supervisor, and 2 water treatment technicians. Operators and water treatment technicians will work 24 hours per day.

The project is expected to employ up to 20 full-time employees. Facility employees will be drawn from the local workforce. Consequently, no increase in population is anticipated as a result of this project. There will not be a significant impact on local employment.

8.8.3.4.2 Population Impacts

Due to the few operations staff, there will not be a significant increase to the local population, even if the operations staff do not currently reside in the San Jose MSA.

8.8.3.4.3 Housing Impacts

Although there is a housing shortage in Santa Clara County, operation of the project, with 20 full-time employees, will not have a significant impact on housing.

8.8.3.4.4 Impacts to the Economy

The annual operations budget is estimated at $70,000 per month, most of which would be spent locally. Assuming a 12-month operations period, this would provide annual local expenditures of approximately $840,000. These annual expenditures would create secondary employment. Although this would be beneficial, it would not be significant.

The project's operation is also expected to generate a short-term beneficial impact by creating employment opportunities for local workers and through local expenditures. The average operations payroll is expected to be $56,000 a year. Since there are 20 operations employees that would work 12 months out of the year, there will be a monthly payroll of $94,333 (or annual payroll of $1,132,000), all of which would be local. In addition, there will be an annual maintenance budget of $175,000. These additional jobs and spending will be beneficial but will not generate significant other employment opportunities and spending in the Santa Clara County area.

8.8.3.4.5. Impacts to Education

The operation of the project will not cause significant population changes or housing impacts on the region. Most, if not all, operations employees are expected to be hired locally. Although no adverse impacts are expected, industrial development within a school district usually charges a one-time assessment fee of $0.33 per square foot or principal building area (Hooper, 2001). The only building associated with the project would be the 10,000 square foot maintenance building, which includes the control room on the 2nd floor. At this rate, the one-time assessment fee for the project will be about $3,300.

8.8.3.4.6 Impacts to Public Services and Facilities

Project operation will not make significant demands on public services or facilities. Due to the safe track record power plants have demonstrated, the operation phases of the project will not impact police, fire, or hazardous materials handling resources. Potential impacts could include responses to emergency calls, routine site visits, and site plan approval from the fire department. However, these impacts are not considered significant, and existing resources are adequate to sustain them. Copies of the records of conversation with the Sheriff, Police, Hazardous Material Handling, and Fire departments are included in Appendix 8.8-1.

Hospital capacity in the general vicinity and the rest of the county is sufficient for emergencies that could possibly occur during the project, such as on-site worker injuries. Therefore, the project’s operation is not expected to create significant adverse impacts on medical resources in the area since the workforce is so small.

8.8.3.4.7 Impacts to Utilities

Project operation will not make significant adverse demands on local water, sanitary sewer, telephone, electricity, or natural gas. Impacts will involve the extension of existing utility lines and an increased demand on the sewer system from the discharge of industrial wastewaters, which will result in a slight increase in salinity (see Section 8.14, Water Resources). Cooling water, supplied from the WPCP, will provide a benefit by reducing the amount of wastewater discharged into the south Bay. Domestic water consumption would be minimal and will be provided by the local water purveyor.

8.8.3.4.8 Fiscal Impacts

The project is not expected to bring a significant amount of either sales tax or property tax revenue to the local communities. The valuation of a power generating facility for property tax purposes is typically based on one of two approaches: 1) the cost approach (i.e., the cost to build the project until the point at which it is operational, including tangible and soft costs); or 2) the revenue approach (i.e., the project’s anticipated revenue-generating capability over time). Generally, the cost approach is used if projected revenues are difficult to establish. The decision of which approach to use is decided by the jurisdiction that is charged with assessing the property. At the time power generation was restructured, jurisdiction for value assessments was transferred to the county level (Jackson, 2001).

The estimated cost of the project is approximately $120 million. The basic countywide property tax rate of 1.0 percent, plus any existing bonds or special assessments (no greater than 1.3 percent), is typically applied to the estimated valuation. If the facility is assessed $120 million, the total property tax obligation will be between $1.2 million and $1.5 million annually.

The county will not realize the annual property tax revenue until construction is completed. Collected property taxes go to the state, where they are reallocated back to the cities, counties, and special districts. In Santa Clara County, 61.8 percent of the property tax revenues are paid to state-supported schools in the county, 12.7 percent are paid into the county general fund, 11.1 percent are paid to local development agencies, 9.2 percent are paid to cities, and 5.2 percent are paid to special districts (Nashlund, 2001). Therefore, approximately $152,400 to $198,120 would be paid to the county general fund annually during the project's 30-year life. The overall anticipated increase in sales and property tax revenue would be beneficial, but not significant impact to Santa Clara County's $317 million or San Jose's $72 million in property taxes.

Assuming the local expenditures during operations of $70,000 per month, the 12-month operating period would generate $840,000 annually. The estimated sales taxes will be about $67,200 per year. Of this amount, the state will receive $48,300; the place of sale (city or county) will receive $8,400; and the county general fund will receive $4,200. The sales tax revenue realized during operations will be beneficial, but not significant.

8.8.4 Cumulative Impacts

Due to the size of the available Bay Area labor force, no labor shortage is anticipated even with the proposed or planned projects in the area. Since both construction and operations personnel will reside primarily in the county, no adverse impact to local schools or housing is anticipated. The wastewater treatment plant has sufficient capacity for the sanitary sewer discharge, and other public services will not be significantly impacted. No adverse cumulative socioeconomic impacts are anticipated from either the construction or operation of the project. In addition, the local community will enjoy a beneficial (but not noticeable) impact from short-term construction and operations employment and the short-term payment of taxes and fees.

8.8.5 Environmental Justice

Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations." The purpose of this Executive Order is to have federal agencies identify and address whether environmental impacts are likely to fall disproportionately on minority and/or low-income members of the community. The federal guidelines set forth a two-step screening process:

1) Whether the potentially affected community includes minority and /or low-income populations; and

2) Whether the environmental impacts are likely to fall disproportionately on minority and/or low-income members of the community.

According to the guidelines established by USEPA to assist Federal agencies to develop strategies to address this circumstance, a minority population exists if the minority population percentage of the affected area is 50 percent or more of the area's general population. Within a 6-mile radius of the project, the 1990 Census data indicated that the minority population comprised approximately 41.5 percent of the total population. In the past decade, the minority population within this 6-mile radius has increased. According to 2000 census block data, minorities now comprise 60.6 percent of the total population (see

Figure 8.8-1). By comparison, the minority population within the City of San Jose has also increased over the last decade. In 1990, San Jose had a minority population of 37.0 percent. According to the 2000 Census data, the City's minority population now comprises 64.0 percent.

Within the 6-mile radius, according to the 1990 census block data[1], only 6.1 percent of the residents were low-income. Figure 8.8-2 shows the percent of low income families by census block group.

Based on the demographic data, although the area within 6 miles of the project site is over 50 percent minority, any potential impacts would not be *disproportionate* since the average minority population with the City is 64 percent. Therefore, the racial balance in this area is pretty similar to the racial balance for the city as a whole. Since low income families only comprise 6.4 percent of the population any potential impacts would not be disproportionately affect low income families.

Since the project does not create any significant adverse impacts that have not been mitigated below the level of significance, this project does not create high and adverse impacts. Therefore, there are no environmental impacts that are likely to fall disproportionately on minority and/or low-income members of the community. A more detailed Environmental Justice analysis is provided in Appendix 8.8-2.

8.8.6 Mitigation Measures

The Applicant shall pay the statutory school impact development fee as required at the time of filing for the "in-lieu" building permit with the City.

8.8.7 LORS

A summary of the LORS, including the project's conformance to them, is presented in Table 8.8-12.

TABLE 8.8-12
Laws, Ordinances, Regulations, and Standards Applicable to Socioeconomics

LORS	Purpose	Applicability	Conformance (Section)
Federal			
Civil Rights Act of 1964	Prohibits discrimination on the basis of race, color, or national origin	Applies to all federal agencies and agencies receiving federal funds.	8.8.5
Executive Order 12898	Avoid disproportionate impacts to minority and low-income members of the community	Applies only to federal agencies. Does not apply to agencies receiving federal funds.	8.8.5
State			
Government Code Sections 65996-65997	Establishes that the levy of a fee for construction of an industrial facility be considered mitigating impacts on school facilities	The School District may charge a one-time assessment fee to mitigate potential school impacts.	8.8.3.4.5

[1] The income data from the 2000 Census is not expected to be available until April 2002.

TABLE 8.8-12
Laws, Ordinances, Regulations, and Standards Applicable to Socioeconomics

LORS	Purpose	Applicability	Conformance (Section)
Education Code Section 17620	Allows a school district to levy a fee against any construction within the boundaries of the district for the purpose of funding construction of school facilities.	The School District may charge a one-time assessment fee to mitigate potential school impacts.	8.8.3.4.5
Local			
Santa Clara County General Plan	Encourages economic development	Encourages development that creates jobs and industrial tax base	8.8.3.3.3, 8.8.3.3.4, 8.8.3.3.8, 8.8.3.4.3, 8.8.3.4.4, 8.8.3.4.8
City of San Jose General Plan	Economic development goal to create a stronger tax base	Encourages development that creates jobs and industrial tax base	8.8.3.3.3, 8.8.3.3.4, 8.8.3.3.8, 8.8.3.4.3, 8.8.3.4.4, 8.8.3.4.8

8.8.7.1 Federal

A summary of the LORS, including the project's conformance to them, is presented in Table 8.8-12.

Civil Rights Act of 1964, Public Law 88-352, 78 Stat.241 (codified as amended in various sections of 42 U.S.C.) Title VI of the Civil Rights Act prohibits discrimination on the basis of race, color, or national origin in all by all federal agencies or activities receiving federal financial assistance.

Executive Order 12898, "Federal Actions to Address Environmental Justice (EJ) in Minority Populations and Low-Income Populations." Requires USEPA and other federal agencies to identify and address whether adverse human health or environmental effects are likely to fall disproportionately on minority and/or low-income members of the community. Applies only to federal agencies, not agencies receiving federal funds.

8.8.7.2 State

Government Code Sections 65996 and 65997, provide the exclusive methods of considering and mitigating impacts on school facilities that might occur as a result of the development of real property.

Education Code Section 17620, listed in Government Code Section 65997 as an approved mitigation method, allows school districts to levy a fee or other requirement against any construction within the boundaries of the school district for the purpose of funding construction of school facilities.

8.8.7.3 Local

8.8.7.3.1 Santa Clara County

The General Plan encourages increased economic development planning and promotion consistent with the economic well-being of Santa Clara County. Relevant policies include:

C-EC-9: "Coordinated countywide economic development planning and promotion efforts should be increased."

C-EC-10: "The County shall play a leadership role in encouraging and facilitating coordinated countywide economic development planning."

8.8.7.3.2 City of San Jose

The basic economic goal is to create a stronger municipal tax base by obtaining a greater share of the total industrial and commercial development in the County, and by nurturing and encouraging expansion of the existing industrial and commercial development in the City of San Jose. The Economic Development Major Strategy is designed to maximize the economic potential of the City's land resources while providing for employment opportunities for San Jose residents.

Economic Development Policy #1: This policy was established to reduce the imbalance between housing and employment by seeking to obtain and maintain increased jobs to improve the existing balance between jobs and housing in San Jose.

Economic Goal #7: This goal states that the City encourages a mix of land uses that contribute to a balanced economic base, including suppliers and services, "green industries," as well as high technology manufacturers and other related industries.

8.8.7.4 Codes

None are applicable.

8.8.8 Involved Agencies and Agency Contacts

Table 8.8-13 provides a list of agencies and contact persons.

TABLE 8.8-13
Involved Agencies and Agency Contacts

Agency	Contact	Title	Phone Number
California State Board of Equalization	Don Jackson	Senior Property Auditor Appraiser	916/323-6940
California State Board of Equalization	Rene Delgado	Senior Tax Auditor	800/400-7115
San Jose Police Department	Ruben Dalaison	Crime Prevention Officer	408/994-4047
San Jose Fire Department	Mike Jonasson	Fire Chief	408/277-4629
San Jose Department of City Planning and Building	Andrew Crabtree	Planner	408/277-4576

8.8.9 Permits and Permitting Schedule

No permits are required for this section. Permits dealing with the affects on public services are addressed as part of the building permit process. These permits are addressed in the Land Use section.

8.8.10 References

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King, Bob. 2001. San Jose Fire Department. Personal communication. May 16.

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Morrison, Joe. 2001. Operating Engineers Union Local No. 3. Personal communication. June 13.

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U.S. Bureau of the Census (Census). 1990 Census. Internet sites: http://www/census.gov;
http://venus.census.gov/cdrom/lookup/928295186; and
http://venus.census.gov/cdrom/lookup/994272068

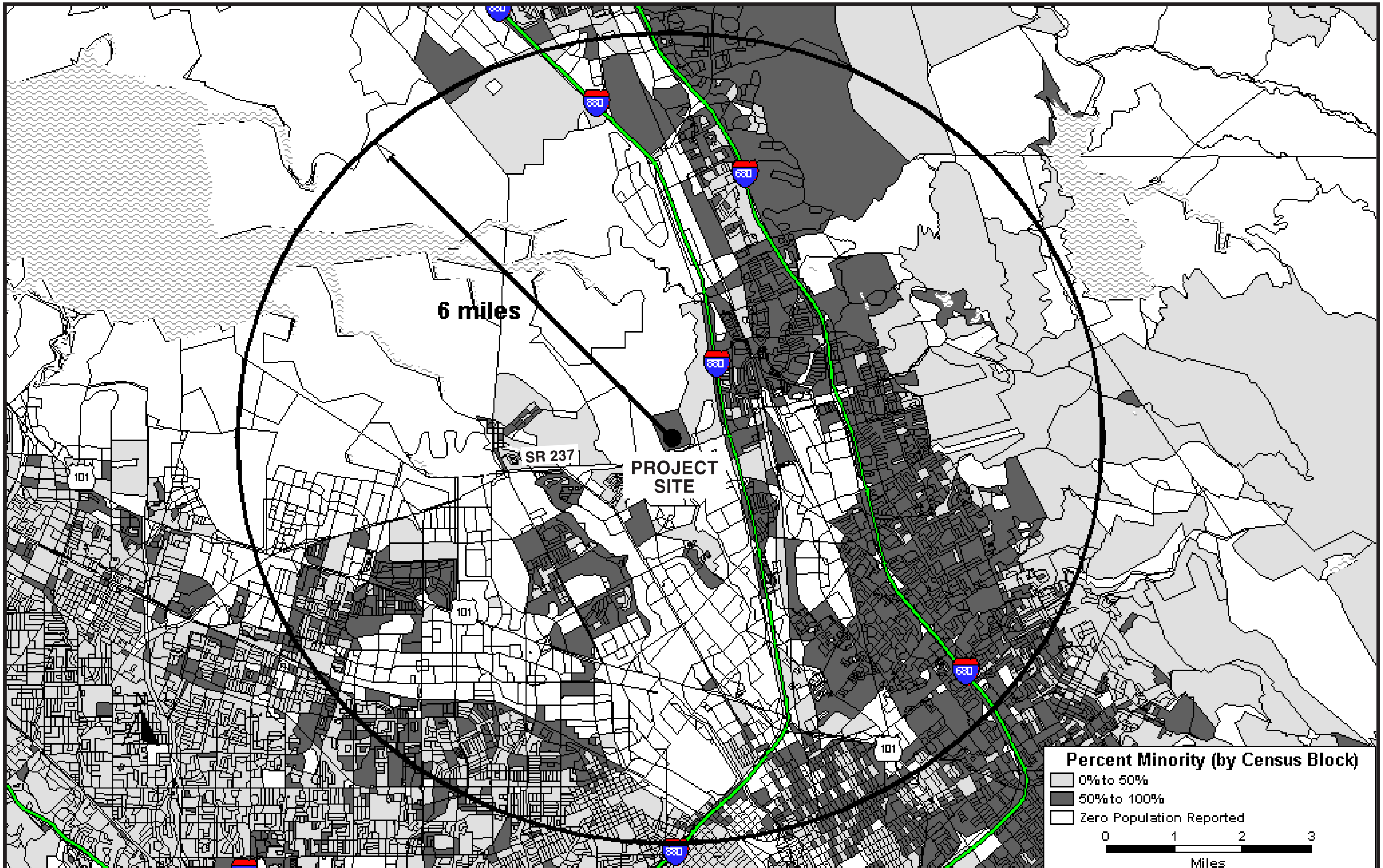

FIGURE 8.8-1
PERCENT MINORITY BY CENSUS BLOCK
APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY
CH2MHILL

D072001001RDD_04 (7/30/01)

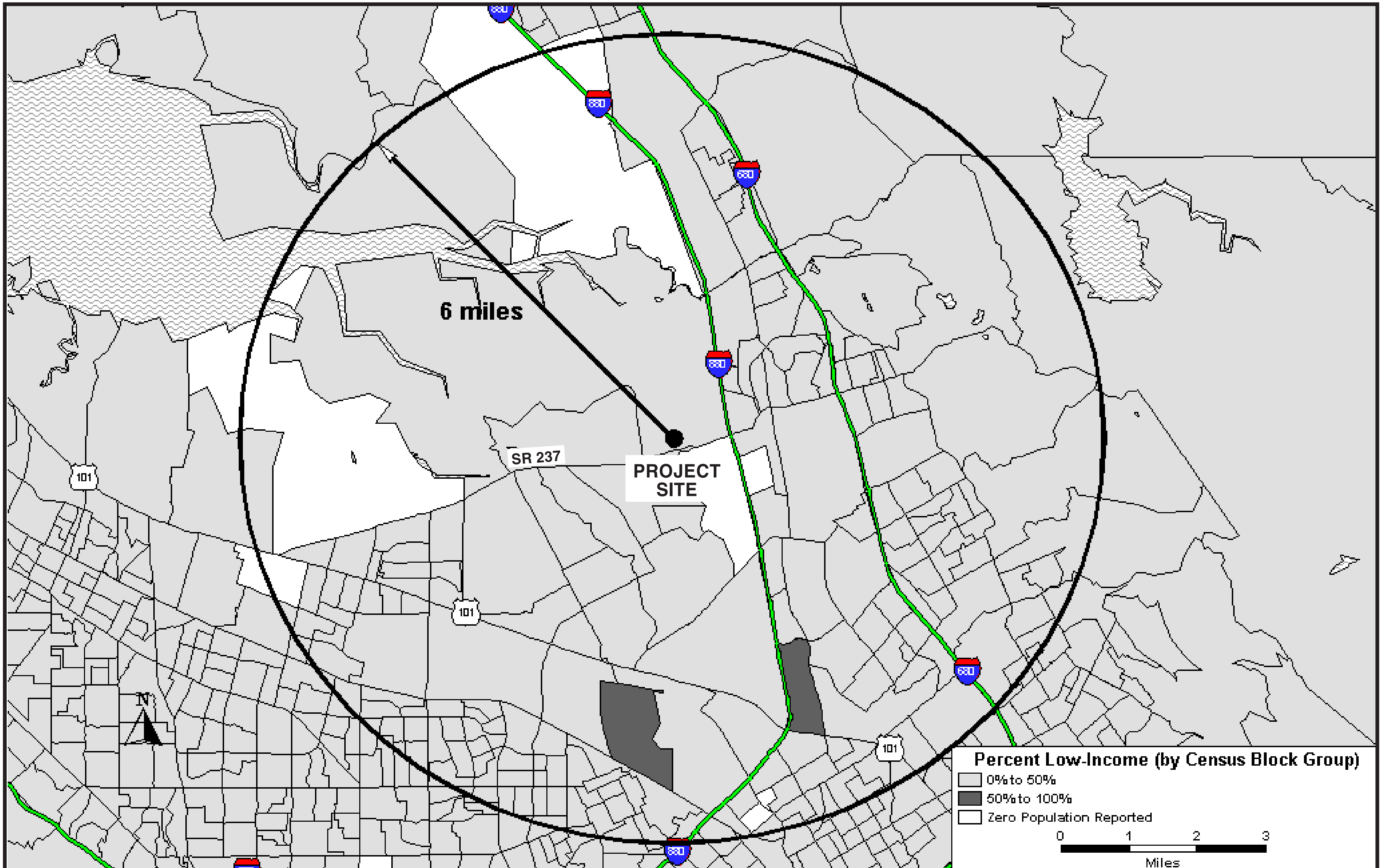

FIGURE 8.8-2
PERCENT LOW INCOME BY CENSUS BLOCK GROUP
APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

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CH2MHILL

8.9 Agriculture and Soils

This section describes the environmental effects on agriculture and soils from the construction and operation of the proposed project. Impacts are assessed for the proposed project site and for the natural gas supply, recycled water supply, and electric transmission line corridors.

Section 8.9.1 describes the existing environment that may be affected, including agricultural use and soil types. Section 8.9.2 identifies environmental impacts from the development, and Section 8.9.3 presents mitigation measures. Section 8.9.4 presents the LORS applicable to agriculture and soils. Section 8.9.5 describes the agencies involved and provides agency contacts. Section 8.9.6 describes required permits and the permit schedule. Section 8.9.7 provides the references used to develop this section.

8.9.1 Affected Environment

The project site is located at the northern end of the Santa Clara Valley, near the southern limit of San Francisco Bay. The region is characterized by northwest-trending ridges and valleys which parallel northwest-trending folds and strike-slip faults. Coyote Creek flows northward past the site and into San Francisco Bay to the northwest.

The U.S. Dataport site is located on a 174-acre parcel in the Alviso area in the northern part of San Jose. It is bound by WPCP buffer land and Zanker Road to the west, SR 237 to the south, Coyote Creek to the east and the WPCP sludge ponds to the north. The parcel is currently being used for agricultural purposes.

The LECEF site consists of approximately 15 acres of privately owned land on the north side of SR 237. The project site currently supports agricultural, commercial and residential uses. High pressure natural gas pipelines are located along a portion of the southern boundary of the c*Power property. The South Bay Recycling Program’s recycled water line extends across the WPCP buffer land in a roughly north-south direction.

The project site is relatively flat and the elevation is approximately 15 feet above mean sea level.

Soils are mapped and described as “mapping units” that are defined to the approximate level of detail required for soil management decision making. The location and properties of the soil mapping units were identified from maps of the area prepared by the U.S. Soil Conservation Service (now called Natural Resources Conservation Service [NRCS]). These soil maps and properties were obtained from the *Soil Survey of Santa Clara Area* (U.S. Department of Agriculture [USDA], 1974). Soil erodibility factors were obtained from the USDA field office in Templeland, California. Data for the affected environment are summarized and presented as described below. (Note: due to the size of most of the tables, all tables are presented at the end of this section.)

- Figures 8.9-1 shows a map of the soils in the project area.
- Table 8.9-1 summarizes the physical and chemical characteristics of each of the individual soil mapping units identified within the U.S. Dataport site boundaries (erosion hazard, soil erodibility, and revegetation potential) and agricultural productivity (Storie index, land capability, and prime agricultural land rating). Prime

agricultural land is defined by USDA as land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses.

8.9.1.1 Agricultural Use around the Proposed U.S. Dataport Site

The types of land use surrounding the LECEF are presented and discussed in Section 8.4, Land Use.

8.9.1.6 Cultivation Practices and Irrigation Methods

No special cultivation practices or activities are performed, on the site or on the land to be traversed by the related linear corridors. The site and the construction parking and laydown area are currently only partially farmed as greenhouse crops. The project will take up to 15 acres of farmland out of production. The major activities associated with crop production include land preparation, fertilizer and pesticide application, and harvesting. The operation of tractors and other implements is associated with these activities. Care will be taken to coordinate with landowners and operators to avoid damage to agricultural land, especially on prime land and among permanent crops. Reasonable construction Best Management Plans will be employed to minimize the generation of dust and to avoid the entrance of heavy equipment into cultivated areas.

8.9.1.7 Soil Types Affected

Soil types in the project area are shown on Figures 8.9-1 and Table 8.9-1 and are described here.

Mi-Mocho clay loam, 0-1 percent slopes

Deep soil from sandstone and shale rock, consisting of moderately permeable clay loam overlying a dark clay or clay loam material. Finer-textured basin soils on which the Mocho clay loam is formed may restrict permeability and drainage, where soil above the clay is reduced or mottled. Deposition over alkali soil materials may exhibit salt accumulations and poor drainage, precluding its use for tree crops. Mocho soils at the project site are considered prime agricultural land.

Mo-Mocho loam over Campbell- and Cropley-like soils, 1-3 percent slopes

Well-drained soils derived from sandstone and shale rock, formed from recent fluvial deposition. Typical profile includes 12 to 30 inches of slightly calcareous loam over a clay loam similar to Campbell or Cropley Series. Subsurface clay loams may impede drainage, but to a lesser degree than in the Mocho clay loam. Soils are on prime agricultural land at U.S. Dataport site.

Mq-Mocho loam, 1-3 percent slopes

This well-drained soil derived from sandstone and shale rock, endemic to the Coyote Creek area. Soils are formed from recent fluvial deposition as well as alluvial fan deposition, and typically extend to 6 feet below ground surface. The soils are typically stratified loam with a fine sandy loam subsoil with slow or moderate permeability. The land is classified as prime agricultural land.

8.9.1.8 Soil Loss and Erosion

The Universal Soil Loss Equation (USLE) is typically used to quantify water-induced soil loss in agricultural areas and to determine the adequacy of soil conservation measures. The erosion characteristics and erodibility factors developed from the USLE for U.S. Dataport's individual soil mapping units are presented in Table 8.9-1. Soil erodibility factor, K, is the estimated average soil loss in tons/acre under a standard set of soil conservation practices. With careful construction management and adequate revegetation after construction, erosion will be minimal. Because the LECEF site is only 15 acres agricultural disturbance will be limited. Beyond loss of the 15 acres for the site footprint, no other agricultural land should be disturbed.

The revegetation potential, defined in this report as the ability of the soil to support non-irrigated rangeland (e.g., grasses, herbaceous plants), is generally rated good for all impacted soils. Soil management practices can be adopted to modify each limitation and to increase the revegetation potential of the soils. Because the impacted area is small and restricted to the project site, revegetation of adjacent agricultural areas may not be required. Onsite, establishment of any vegetation cover for permanent erosion control should not be limited by soil properties to the point where mitigation of factors limiting fertility are necessary.

8.9.2 Environmental Effects

The following subsections describe the probable environmental effects on agricultural production and soils during the construction and operation phases of the project.

8.9.2.1 Construction

Without proper care, construction effects on soil resources can include increased soil erosion, soil compaction, loss of soil productivity, and disturbance of saturated soils. Soil erosion results in the loss of topsoil and can increase the sediment load in surface waters downstream of the construction site. The magnitude, extent, and duration of this construction-related impact will depend on several factors, including the erodibility of the soil (discussed above), the proximity of the construction to receiving water, and the method, duration, and time of year of construction.

Construction at the LECEF site, including construction parking and laydown area, will result in soil compaction and the loss of soils for agriculture. Soil erosion will be controlled in accordance with an approved Erosion Control Plan. Watering loose surfaces during construction will minimize soil loss from dust escaping into the atmosphere. Topsoil removed from the site in preparation for foundation construction will be stockpiled and covered; the topsoil may be available for sale for landscaping use offsite or used to enhance the surface characteristics of onsite areas for revegetation. After construction, a part of the construction laydown area will be landscaped to provide a buffer around the site.

Once constructed, the linear facilities are not expected to have any significant effect on surfacial soils onsite or offsite. However, during construction, standard erosion and dust control techniques will be implemented to reduce siltation of storm drains and waterways. Use of these techniques will result in an insignificant loss of soil to wind and water erosion.

8.9.2.2 Operation

Project operation will not result in impacts to the soil from erosion or compaction. Routine vehicle traffic during project operation will be limited to existing roads, most of which are paved, and standard operational activities will not involve the disruption of soil. When linear facilities need to be inspected or maintained, vehicle traffic near cultivated areas will be minimized.

8.9.2.3 Cumulative Effects

Individual (hence cumulative) soil erosion and sedimentation effects associated with the LECEF site will not be significant. In addition, contaminant effects on the revegetation potential are not expected, because no significant unmitigated amounts of pollutants will be produced by project activities. Only a relatively small amount of land will be put out of agricultural production. Therefore, the effect on total crop will be minimal.

8.9.3 Mitigation Measures

The proposed project site is generally flat with no existing slopes on or directly adjacent to the site. For this reason, the potential for erosion and siltation occurring during site grading would be low. However, during periods of heavy rainfall, run-off can occur. Standard practices, including implementation of a Storm Water Pollution Prevention Plan and conditions in City of San Jose grading permits, during grading will reduce the potential for erosion or siltation impacts on the site.

Landowners will be notified of activities adjacent to their properties. Vehicles will be driven only on areas designed to support them and with the express permission of the landowners. Vehicle traffic will be minimized to avoid undue soil compaction. Vehicle speeds will be kept low enough to avoid significant dust generation. Significant offsite migration of sediment will be prevented by measures described in the following sections.

The City of San Jose recommends Best Management Practices (BMP) for erosion control during and after construction. Construction BMPs include straw bales, flow dissipaters, silt fences and hydroseeding which are temporary measures typically removed after the completion of construction. Post-construction erosion control BMPs include “structural controls such as inlet filters, oil/sediment separators and the use of porous paving materials. Post-Construction BMPs can also include design features such as grass swales, filter strips and detention/retention ponds (City of San Jose, 2001).” Additional information is available in the *Manual of Standards for Erosion and Sediment Control Measures* (ABAG, 1995).

8.9.4 Applicable Laws, Ordinances, Regulations, and Standards

Federal, state, county, and local LORS applicable to agriculture and soils are discussed below and summarized in Table 8.9-2.

8.9.4.1 Federal

The Clean Water Act (CWA) authorizes the U.S. EPA to regulate discharges of wastewater and stormwater into surface waters by issuing National Pollutant Discharge Elimination System (NPDES) permits setting pretreatment standards. These permits are implemented at the state level by the Regional Water Quality Control Boards (RWQCB), but the U.S. EPA may retain jurisdiction at its discretion. The CWA’s primary effect on the U.S. Dataport site is in regard to the control of soil erosion during construction, including the preparation and execution of site-specific erosion control plans and measures for the construction of each project element that will entail the physical disruption or displacement of surface soil.

8.9.4.2 State

The RWQCB, which controls surface water discharge, may become involved indirectly if soil erosion threatens water quality. Also, CEQA requires the assessment of impacts on state prime agricultural lands. Contact information for local pollution control agencies and personnel are included in Table 8.9-3.

8.9.4.3 Local

Ordinances for land grading and stormwater pollution control have been established by Santa Clara County (Santa Clara County Ordinance No. NS1203.35 and NS517.55). These ordinances establish permitting requirements and exemptions for grading land and activities that can cause the discharge of pollutants into stormwater systems or water courses. Detailed BMPs for minimizing soil erosion and water pollution associated with land grading and heavy equipment operation are also outlined by the county (Santa Clara County Nonpoint Source Pollution Control Program, 1993; operation-specific brochures).

In the City of San Jose, construction projects exceeding five acres must obtain coverage under the General Construction Activity Stormwater Permit (General Construction Permit) issued by the State Water Resources Control Board (SWRCB) for storm water discharges. To obtain this coverage under the General Construction Permit, a Notice of Intent must be filed with the SWRCB. The General Construction Permit requires the preparation and implementation of a Stormwater Pollution Prevention Plan (SWPPP). The SWPPP must identify BMPs to reduce pollutants in storm water discharges from construction activities.

The San Jose City Council has established an Excavation and Grading Code and policies for post-construction urban runoff management (City of San Jose Department of Planning Building and Code Enforcement, 1998; San Jose Municipal Code 1979). The purpose of the post-construction policy is to establish a framework for new major development to reduce stormwater pollutants entering creeks, rivers, and the San Francisco Bay. General provisions of the policy include:

- Installation and maintenance of post-construction control measures
- Stencil onsite inlets in conformance with City requirements
- Clean onsite inlets at least once per year, before the wet season

Project-specific BMPs are determined in conjunction with the permit development process. Specific design of engineered treatment controls must be approved by the Building Division of San Jose's Department of Planning, Building and Code Enforcement.

8.9.5 Involved Agencies and Agency Contacts

Numerous agencies are involved with farmland protection and the control of soil erosion. These include the NRCS, the California Department of Conservation, the state and regional water quality control boards, and other local pollution control agencies. The agencies and their contacts are shown in Table 8.9-3.

8.9.6 Permits Required and Permit Schedule

A construction permit will be obtained before construction begins. San Jose will require an excavation and grading permit before construction at the site. Other permits that may be required are an NPDES permit and a stormwater permit. These permits are discussed in Section 8.14, Water Resources.

8.9.7 References

ABAG. 1995. Manual of Standards for Erosion and Sediment Control Measures, Association of Bay Area Governments.

U.S. Department of Agriculture (USDA). 1958. Soil Survey of Santa Clara Area, California.

City of San Jose, Department of Planning, Building and Code Enforcement. 1998. Guidance Manual on Selection of Stormwater Quality Control Measures.

City of San Jose, Department of Planning. 2001. San Jose Stormwater Management.

TABLE 8.9-1
Soil Mapping Units Description and Properties[a]

Map Symbol	Soil Series	Texture	Slope (%)	Depth to Bedrock (ft)[b]	Drainage	Permeability (in/hr)[c]	Erodibility factor - K (tons/ac)	Erosion Hazard	Surface runoff rate	Revegetation Potential[d]	Storie Index	Land Capability[e]	Parent material	Prime Ag Land?
Mi	Mocho	Clay loam	0-1	ND	Well drained	Surface soil-moderate; subsoil-slow	0.15	Slight	Very slow	Free of alkali-very good; slight alkali-good; moderate alkali-fair; strong alkali-poor	Free of alkali-69; slight alkali-48;moderate alkali-28; strong alkali-7	IIw-2, IIs-7, IIs-7, or VIIw-7	Recent medium-textured alluvium from sedimentary rocks	Y
Mo	Mocho over Campbell or Cropley	Loam over clay loam	1-3	ND	Well drained	Surface soil-moderate; subsoil-moderate to slow	0.15	Slight	Slow	Very good	90	I	Recent medium-textured alluvium from sedimentary rocks	Y
Mq	Mocho	Loam	1-3	ND	Well drained	Surface soil-moderate; subsoil-moderate	0.15	Slight	Slow	Free of alkali-good; slight alkali-good	Free of alkali-100; slight alkali-90	I or IIs-7	Recent medium-textured alluvium from sedimentary rocks	Y

[a] All data, except revegetation potential obtained from NRCS publications and reports; ND—no data available.
[b] shallow soil over bedrock may limit normal excavation and trenching operations.
[c] Permeability ratings (units in inches per hour): Very slow — < 0.06, slow – 0.06 to 0.20, moderately slow – 0.20 to 0.60, moderate – 0.60 to 2.00, moderately rapid – 2.00 to 6.00, rapid – 6.00 to 20.00, and very rapid — > 20.00.
[d] Based on suitability for non-irrigated rangeland.
[e] Land capability class designations: I – arable land with few or no limitations to productivity; II – arable land with limitations such as drainage, salinity, structure or slope; III – severely limited arable land with restricted range of suitable crops; IV – very severe limitations requiring careful management and plant selection; V – No erosion hazard but only suitable for pasture, range, woodland, or wildlife; VI – suitable for pasture, range, woodland, or wildlife, but severe problems with slope or soil; VII – Similar to Class VI, but very severe limitations, some of which are uncorrectable; and, VIII – only suitable for wildlife or recreation.

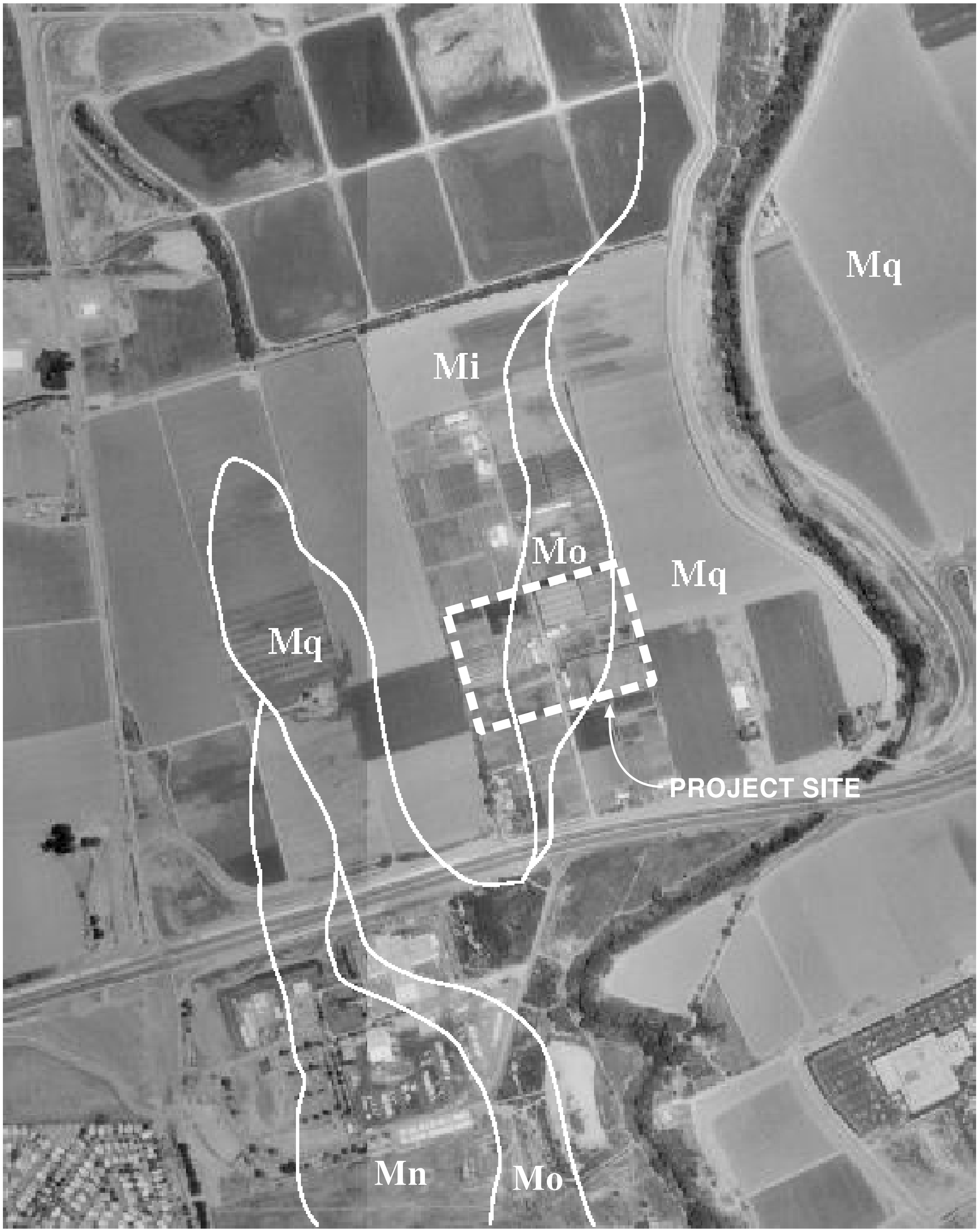
Land capability subclass designations: e – risk of erosion; w – wetness, drainage, or flooding problems; s – rooting zone limitations; and c – climatic limitations

TABLE 8.9-2
Applicable Laws, Ordinances, Regulations, and Standards

LORS	Applicability	Conformance (Section)
Federal:		
Clean Water Act (CWA)	Controls erosion of soil and disruption or displacement of surface soil	Section 8.9.3 and sections pertaining to stormwater management
California:		
CEQA	Assessment of impact on prime agricultural land	Section 8.9.3
Porter-Cologne Water Quality Control Act of 1972	Controls erosion of soil and disruption or displacement of surface soil	Section 8.9.3 and sections pertaining to stormwater management
Local:		
Santa Clara County: Grading Ordinance	Grading and trenching Soil conservation	Section 8.9.3 and sections pertaining to stormwater management
City of San Jose:	Soil conservation Excavation and grading	Section 8.9.3 and sections pertaining to stormwater management

TABLE 8.9-3
Agency Contacts

Item	Agency	Contact	Title	Telephone
Grading and trenching	County of Santa Clara Environmental Resource Agency, County Government Center, 70 W. Hedding St, 11th Floor, San Jose, CA, 95110	Steve Homan	Nonpoint Source Pollution Control Program Coordinator	408/299-2871
Soil erosion	California Department of Conservation, Farmland Mapping and Monitoring Program, 801 K Street, MS 13-71 Sacramento, CA 95814-3528 Phone: 916-324-0859	Greg Posley	Program Director	916/327-0859
Grading	City of San Jose Department of Public Works, 801 N. First St, Rm 340, San Jose, CA, 95110	Tim Borden	Senior Engineer	408/277-5161
Soil erosion	RWQCB, San Francisco Bay Region (2), 1515 Clay St., Suite 400, Oakland, CA 94612	None identified by RWQCB		510/622-2300 (main number)



LEGEND

- Mi Mocho clay loam, 0-1 percent slopes
- Mo Mocho loam over Campbell- and Cropley-like soils, 1-3 percent slopes
- Mq Mocho loam, 1-3 percent slopes

NOTE:
Soil legend describes mapping units relevant to project site.

FIGURE 8.9-1
LECEF PROJECT AREA
SOIL DELINEATION
APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

D072001001RDD_03 (8/1/01)

CH2MHILL

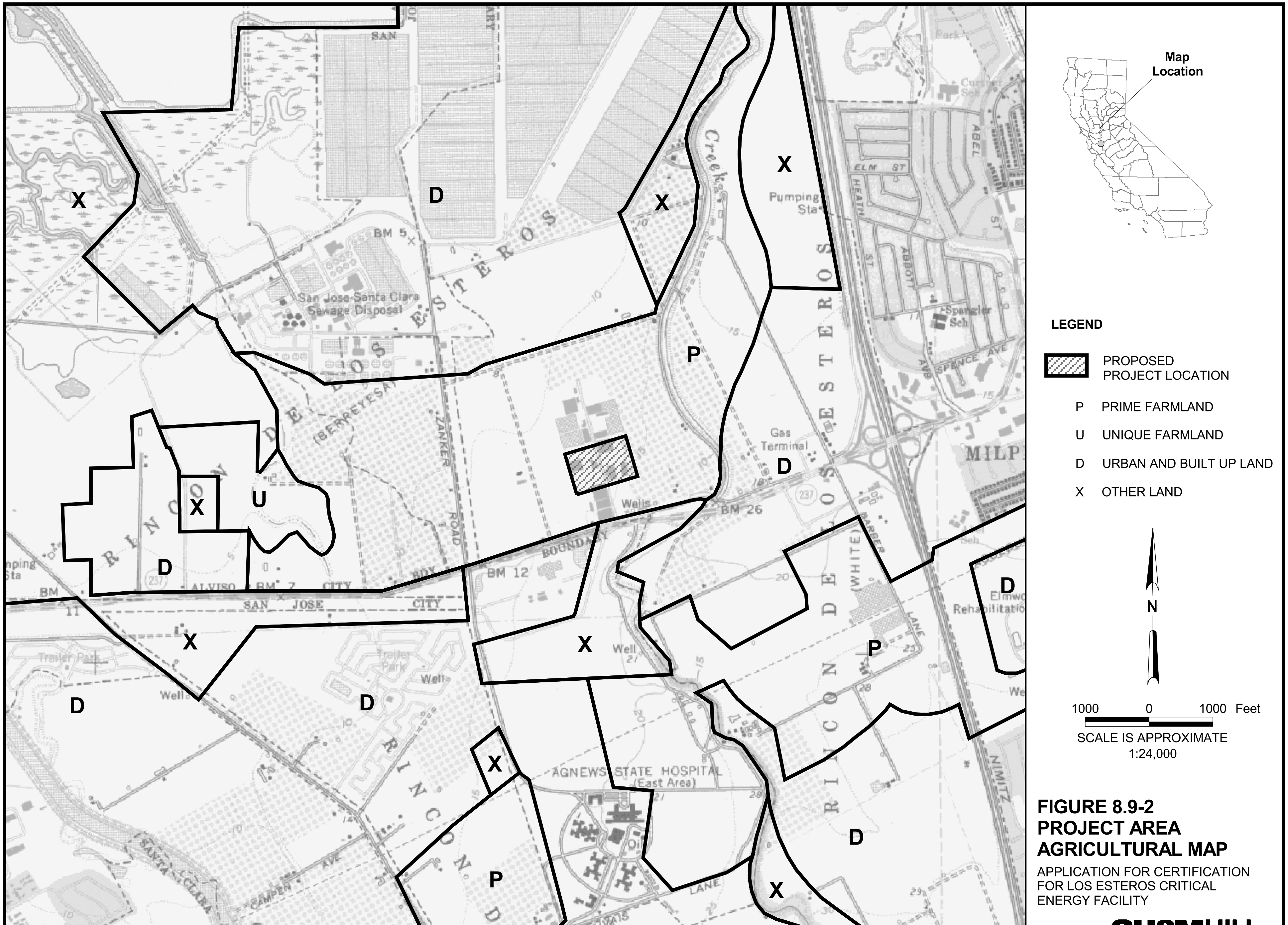


FIGURE 8.9-2
PROJECT AREA AGRICULTURAL MAP

APPLICATION FOR CERTIFICATION FOR LOS ESTEROS CRITICAL ENERGY FACILITY

CH2MHILL

8.10 Traffic and Transportation

This section presents the potential effects of the facility on the transportation system, including any necessary modifications to the transportation system and increase in traffic from construction and operation of the proposed power plant. A description of the existing transportation system and levels of service (LOS) are presented, along with an analysis of potential impacts. The data presented in this section and used to evaluate traffic impacts from the proposed project was taken from the Draft Environmental Impact Report (EIR) and Final EIR (FEIR) for the U.S. DataPort Planned Development Zoning Project (referred to as the "EIR"). The EIR addressed the rezoning and prezoning of a 174-acre parcel in connection with the development of the U.S. DataPort Project. The U.S. DataPort project was a combined 49 MW energy center (referred to as the Central Reliability Energy Center, CREC) and a 2.227 million gross square foot data center. In the City of San Jose's resolution approving this project and rezoning/prezoning the site, the City Council suggested that the developer consider additional options to reduce/replace the need for diesel backup generators. This proposed project is in response to that request and can be considered as a modification, under CEQA, to the U.S. Dataport project.

Section 8.10.1 discusses the existing environmental setting; Section 8.10.2 discusses the environmental effects of construction and subsequent operation as compared to the conditionally approved U.S. Dataport project; Section 8.10.3 presents applicable laws, ordinances, regulations and standards (LORS); and Section 8.10.4 contains references.

8.10.1 Affected Environment

8.10.1.1 Highways and Roads

The project is located in the Alviso area of North San Jose (see Figure 1.1-1). Regional access to the site is provided by several State of California Department of Transportation (Caltrans) freeway facilities. Freeways near the site are U.S. Highway 101 (US 101), State Route (SR) 237, and Interstate 880 (I-880). The project area is bordered by State Route 237 (SR 237) to the south, and Zanker Road to the west. Local access to the site is provided by several major arterial streets. Major arterials near the site are North First Street, Zanker Road, Brokaw Road, Trimble Road, Montague Expressway, Tasman Drive, and Calaveras Boulevard. The local roadway network and study intersections are shown on Figure 8.10-1.

U.S. Highway 101 provides north-south regional access and extends almost the entire length of California, from beyond the California-Oregon border to Los Angeles. Within Santa Clara County, US 101 crosses through eastern San Jose to the east of the site, and connects with State Routes 85, 237, 87, 130 East, 82 North, 152, and 25 East, and Interstates 880, 680 North, and 280 West. US 101 is an eight-lane freeway [three mixed-flow lanes and one high-occupancy vehicle (HOV) lane in each direction]. The posted speed limit on US 101 is 65 miles per hour (mph). Access to and from the site is provided via its interchanges with I-880, Brokaw Road, Trimble Road, and Montague Expressway.

State Route 237 is a six-lane freeway located south of the site. It extends in an east/west direction, providing access to I-880 and US 101. Two of the six lanes (one in each direction) are designated as HOV lanes. Direct access to the site is provided via its interchange with Zanker Road.

Interstate 880 is a four- to six-lane freeway east of the site. It extends north to Oakland and south to Campbell, where it becomes SR 17 to Santa Cruz. Access to the site is provided via the SR 237/I-880 interchange.

North First Street is a four-lane arterial street that provides access to the site from downtown San Jose, Montague Expressway, and Trimble Road. The Guadalupe Corridor Light Rail Train (LRT) line operates in the median of the roadway between downtown San Jose and Tasman Drive.

Zanker Road provides direct access to the site from SR 237 and all other major arterials in the vicinity of the site. Zanker Road is designated as an arterial from the project driveway south, and as a major collector to the north, where it becomes Los Esteros Road west of the WPCP. It varies in width between two and four lanes south of SR 237, and is two lanes to the north. Construction access to the site is provided via Zanker Road from the north via the PG&E constructed substation road. The primary operational access road is the northern segment of the access road presented in the U.S. Dataport EIR. Secondary operational access will be from Alviso-Milpitas Road and the PG&E constructed substation access road.

Brokaw Road is an east/west six-lane arterial that runs between its interchanges with I-880 and US 101. This facility provides access to the project site via Zanker Road and North First Street.

Trimble Road is an east/west arterial that extends from Montague Expressway to U.S. 101. It generally operates as a six-lane facility, but narrows west of Orchard Parkway, before crossing the four lane bridge over the Guadalupe River. At its intersection with De La Cruz Boulevard, near the U.S. 101 interchange, Trimble Road becomes De La Cruz Boulevard.

Montague Expressway is a six-lane expressway with one lane in each direction provided for HOVs. During the morning commute period (5:00 AM to 9:00 AM) the westbound HOV lane is restricted to vehicles occupied by two or more people. Likewise, the eastbound HOV lane is restricted during the afternoon commute period (3:00 PM to 7:00 PM). Montague Expressway provides access to I-880 and U.S. 101.

Tasman Drive is an east/west four to six lane divided arterial that extends from Lawrence Expressway to I-880. The Tasman West Light Rail Train line operates in the median of the roadway between Fair Oaks Avenue in Sunnyvale and North First Street in North San Jose. The extension of the light rail line along Tasman Drive east of Baypointe Parkway to Milpitas is currently under construction.

Calaveras Boulevard is an east/west six-lane arterial that runs between I-680 and I-880. West of I-880, Calaveras Boulevard transitions into SR 237.

8.10.1.2 Truck Routes, Weight and Load Limitations

The following provisions, from the California Vehicle Code, apply to all roadways and are therefore applicable to this project. As stated in the San Jose 2020 General Plan (1994), truck traffic is encouraged to use state freeways, county expressways, and 6-lane arterials and to use routes that have the least adverse impact on residential areas. Truck travel on neighborhood streets should be minimized, and freight loading and unloading should not occur on public streets.

The California Department of Transportation (Caltrans) weight and load limitations for state highways apply to all state and local roadways. According to the California Highway Patrol (CHP), U.S. 101 is a national highway network route that any legal truck can use, even if it exceeds the California length limitation of 65 feet. The weight and load limitations are specified in the California Vehicle Code Sections 35550 to 35559. The following provisions, from the California Vehicle Code, apply to all roadways and are therefore applicable to this project.

General Provisions:

- The gross weight imposed upon the highway by the wheels on any axle of a vehicle shall not exceed 20,000 pounds and the gross weight upon any one wheel, or wheels, supporting one end of an axle, and resting upon the roadway, shall not exceed 10,500 pounds.
- The maximum wheel load is the lesser of the following: a) the load limit established by the tire manufacturer, or b) a load of 620 pounds per lateral inch of tire width, as determined by the manufacturer's rated tire width.

Vehicles with Trailers or Semitrailers:

- The gross weight imposed upon the highway by the wheels on any one axle of a vehicle shall not exceed 18,000 pounds and the gross weight upon any one wheel, or wheels, supporting one end of an axle and resting upon the roadway, shall not exceed
- 9,500 pounds, except that the gross weight imposed upon the highway by the wheels on any front steering axle of a motor vehicle shall not exceed 12,500 pounds.

The San Jose Streets and Transportation Department estimates citywide truck traffic to average 5 percent of total vehicular traffic (Martarano, 2001). According to the State of California report, "1998 Annual Average Daily Truck, Traffic on the California State Highway System" (Caltrans 2001), the percentage of trucks on U.S. 101 is 5.6 percent of total traffic at SR 85. The percentage of trucks on SR 237 at US 101 is 5.7 percent and at I-880 is 5.8 percent. For I-880, the percentage of trucks at US 101 is 3.7 percent.

8.10.1.3 Traffic Volumes

Table 8.10-1 summarizes the roadway traffic conditions in the project vicinity. The table includes peak period, date of data collection, average delay and LOS. The LOS concept uses qualitative measures that characterize operational conditions within a traffic stream. Levels of service are defined and given letters from A to F, with LOS A representing the best operating conditions and LOS F the worst. The p.m. peak hour (4 p.m.- 6 p.m.) versus a.m. peak hour (7 a.m.- 9 a.m.) is assumed to be the period in which the maximum amount of traffic is experienced.

According to state law, all urbanized counties in California must prepare and monitor the implementation of a Congestion Management Program (CMP). Santa Clara County's CMP is overseen by the Santa Clara Valley Transportation Authority. The County of Santa Clara and cities within are required to implement a deficiency plan whenever transportation facilities under their jurisdiction, which are part of the CMP roadway system, operate below, or are expected to operate below, the adopted LOS standards. San Jose is part of the CMP and has adopted CMP agency requirements (San Jose 2020 General Plan). The Santa

Clara County CMP states that LOS D is to be achieved whenever practical and LOS E threshold represents the maximum vehicles per day that the roadway can serve and still

TABLE 8.10-1
Existing Intersection Levels of Service

Intersection	Peak Hour	Count Date	Ave. Delay (sec. Per vehicle)	LOS
City of San Jose Intersections				
Zanker Rd./SR 237 (N)*	AM	3/28/00	7	B
	PM	3/28/00	10	B
Zanker Rd./SR 237 (S)*	AM	3/28/00	14	B
	PM	3/28/00	9	B
Zanker Rd./Holger Wy	AM	3/14/00	9	B
	PM	3/15/00	10	B
Zanker Rd./Tasman Dr.	AM	3/14/00	27	D
	PM	3/15/00	27	D
Zanker Rd./River Oaks Pkwy.	AM	3/16/00	16	C
	PM	3/15/00	14	B
Zanker Rd./Innovation Dr.	AM	3/08/00	16	C
	PM	3/02/00	20	C
Zanker Rd./Plumeria Dr.	AM	3/21/00	18	C
	PM	3/21/00	18	C
Zanker Rd./Trimble Rd.*	AM	3/12/00	27	D
	PM	3/11/00	41	E
Zanker Rd./Bonaventura Dr.	AM	3/30/00	6	B
	PM	3/30/00	8	B
Zanker Rd./Charcot Av.	AM	3/14/00	20	C
	PM	3/14/00	27	D
Zanker Rd./Brokaw Rd.*	AM	3/17/00	35	D
	PM	3/17/00	41	E
Bering Dr./Brokaw Rd.	AM	3/14/00	14	B
	PM	3/14/00	17	C
US 101/Brokaw Rd.*	AM	5/19/00	22	C
	PM	5/19/00	24	C
Cisco Wy/Tasman Dr.	AM	3/16/00	12	B
	PM	3/15/00	15	B
Morbridge Dr./Tasman Dr.	AM	3/30/00	12	B
	PM	3/30/00	12	B
Baypointe Pkwy./Tasman Dr.	AM	3/29/00	15	B
	PM	3/29/00	8	B
North First St./Tasman Dr.	AM	3/16/00	26	D
	PM	3/16/00	29	D
North First St./Rio Robles	AM	3/21/00	12	B
	PM	3/21/00	17	C
North First St./River Oaks Pkwy.	AM	3/21/00	18	C

TABLE 8.10-1
Existing Intersection Levels of Service

Intersection	Peak Hour	Count Date	Ave. Delay (sec. Per vehicle)	LOS
	PM	3/21/00	23	C
North First St./Trimble Rd.*	AM	3/21/00	34	D
	PM	3/21/00	38	D
North First St./Charcot Av.	AM	3/15/00	26	D
	PM	3/15/00	29	D
North First St./Brokaw Rd.*	AM	2/24/00	35	D
	PM	2/24/00	34	D
De La Cruz Blvd./Trimble Rd.*	AM	5/16/00	25	C
	PM	5/16/00	38	D
Orchard Pkwy./Trimble Rd.	AM	3/14/00	14	B
	PM	3/14/00	18	C
North First St./Montague Expwy.*	AM	5/17/00	48	E
	PM	3/9/00	61	F
Zanker Rd./Montague Expwy.*	AM	4/11/00	37	D
	PM	3/9/00	48	E
O'Toole Av-McCarthy Blvd./Montague Expwy.*	AM	5/17/00	89	F
	PM	3/16/00	123	F
City of Santa Clara Intersections				
De La Cruz Blvd./Montague Expwy.*	AM	10/7/98	41	E
	PM	11/4/98	24	C
Mission College Blvd./Montague Expwy.*	AM	4/15/98	75	F
	PM	11/4/98	27	D
City of Milpitas Intersections				
Abbott Av./Calaveras Blvd.	AM	3/23/00	57	E
	PM	3/23/00	25	C
Serra Wy./Calaveras Blvd.	AM	3/21/00	11	B
	PM	3/15/00	18	C
Abel St./Calaveras Blvd.*	AM	10/8/98	33	D
	PM	10/8/98	39	D
South Milpitas Blvd./Calaveras Blvd.*	AM	10/6/98	34	D
	PM	10/6/98	44	E
Hillview Dr./Calaveras Blvd.	AM	5/4/00	25	C
	PM	5/9/00	26	D
McCarthy Blvd./Tasman Dr.	AM	6/15/99	19	C
	PM	6/15/99	29	D
Alder Dr./Tasman Dr.	AM	6/16/99	11	B
	PM	6/16/99	40	D
SB I-880 off ramp/Tasman Dr.	AM	6/17/99	20	C
	PM	6/17/99	21	C
NB I-880 off ramp/Great Mall Pkwy.	AM	6/17/99	25	C

TABLE 8.10-1
Existing Intersection Levels of Service

Intersection	Peak Hour	Count Date	Ave. Delay (sec. Per vehicle)	LOS
	PM	6/17/99	43	E
Abel St./Great Mall Pkwy.	AM	1/26/00	29	D
	PM	10/12/99	21	C
McCarthy Blvd./SR 237 (S)	AM	5/17/00	17	C
	PM	5/17/00	11	B

* Denotes CMP intersection.
Source: US Dataport PDZ DEIR, Table 6

meet the minimum acceptable standard on the CMP roadway system (Santa Clara County, 1994). Figure 8.10-2 shows the traffic analysis areas within the region. Figure 8.10-3 presents existing daily and peak hour traffic volumes on the major roadways.

The level of service methodology used for regional intersections and local intersections in Milpitas and Santa Clara is TRAFFIX, which is based on the *Highway Capacity Manual (HCM)* method for signalized intersections. TRAFFIX evaluates signalized intersection operations on the basis of average delay time for all vehicles at the intersection. The level of service standard for local signalized intersections in both Santa Clara and Milpitas is LOS D or better. Intersections within the Golden Triangle formed by US 101, I-880, and SR 237 are evaluated using the North San Jose Area Development Policy (NSJADP). The NSJADP estimates the level of service based on critical volume-to-capacity (V/C) ratios calculated by TRAFFIX. An acceptable level of service in the City of San Jose, including the Golden Triangle area, is defined as LOS D or better. LOS D is also the standard for local City of San Jose intersections outside the Golden Triangle area, formed by US 101, I-880, and SR 237, covered by the North San Jose Area Development Policy. The level of service standard for regional intersections in Santa Clara and Milpitas uses the Congestion Management Program (CMP) standard of LOS E or better.

Golden Triangle Intersections: Under existing peak-hour conditions, two of the signalized Golden Triangle study intersections (Zanker Road/Trimble Road and Zanker Road/Brokaw Road) currently operate at LOS E during the PM peak hour. All other signalized study intersections currently operate at LOS D or better.

North San Jose Deficiency Plan Intersections: Under existing peak-hour conditions, two of the North San Jose Deficiency Plan (NSJADP) study intersections, O'Toole-McCarthy Boulevard and Montague Expressway (AM and PM peak hours) and North First Street/Montague Expressway (PM peak hour), currently operate LOS F during one or both of the peak hour periods. All other NSJADP study intersections currently operate at LOS E or better.

Regional CMP Intersections: Under existing peak-hour conditions, one of the CMP study intersections within the City of Santa Clara, Mission College Boulevard and Montague Expressway, currently operates at LOS F during the AM peak hour. The other CMP study intersection within the City of Santa Clara currently operates at LOS E or better.

Local City of Milpitas Intersections: The analysis found that two local signalized study intersections within the City of Milpitas currently operate at LOS E or F under existing conditions.

Regional CMP Intersections: Under existing peak-hour conditions, the CMP study intersections within the City of Milpitas currently operate at LOS E or better.

Local Freeway Segments*:* Twenty freeway segments in the vicinity were evaluated. Seven of the freeway segments analyzed currently operate at LOS F during at least one of the peak hours. High occupancy vehicle (HOV) lanes, with the exception of one segment, generally operate at LOS E or better on the freeway segments studied. The results of the freeway segment level of service analysis are shown in Table 8.10-2.

8.10.1.4 Public Transportation

The Santa Clara Valley Transportation Authority (VTA) provides regional and local public transportation service and connection to other transportation systems, including:

- CalTrain
- Altamont Commuter Express
- Amtrak

The project site is not served directly by any local VTA bus lines, but several bus lines provide service in the project area. The Number 33 bus line provides service between Main Street in Milpitas and the Baypointe Light Rail Transit (LRT) station in North San Jose with 20-minute headways during commute hours. The Number 44 line provides service between the Santa Clara CalTrain Station and North First Street/River Oaks Parkway with 30 to 60-minute headways during commute hours. The Number 58 line provides service between West Valley College and Alviso via North First Street, with 30-minute headways during commute hours. The Number 74 line provides service between Eastridge Mall and the Baypointe LRT station, with 20-minute headways during commute hours.

The nearest existing VTA LRT station is located approximately one mile from the project site near the intersection of North First Street and Tasman Drive. The Baypointe LRT station serves as a connection point for the Tasman West and Guadalupe Corridor LRT lines as well as bus line Numbers 33, 58, and 74. An LRT station is planned on Tasman Drive, just east of Zanker Road, approximately 0.8 mile south of the project site.

Commuter rail service between San Francisco and Gilroy is provided by CalTrain. The nearest CalTrain stations are the Lawrence and Santa Clara stations approximately five miles from the project site. CalTrain provides service with approximately 30-minute headways during commute hours. The VTA provides shuttle service from the stations to bus lines and the LRT.

Commuter rail service between Stockton and San Jose is provided by the Altamont Commuter Express (ACE). The Great America Amtrak/ACE station is located approximately two miles from the project site at the intersection of Lafayette Street and Calle De Luna in the City of Santa Clara. ACE provides service with two trains during AM and PM commute hours. The VTA provides shuttle service from the station to bus lines and LRT.

TABLE 8.10-2
Freeway Segments Levels of Service – Existing Condition

				Mixed Flow Lanes					HOV Lanes				
Freeway	Segment	Direction	Peak Hour	Ave. Speed[1]	# of Lanes	Volume[1]	Density[2]	LOS	Ave. Speed[1]	# of Lanes	Volume[1]	Density[2]	LOS
SR 237	Mathilda to Lawrence	EB	AM	60	2	3,190	26.6	D	65	1	880	13.5	B
			PM	65	2	1,960	15.1	B	65	1	410	6.3	A
SR 237	Lawrence to Great America	EB	AM	60	2	3,500	29.2	D	65	1	150	2.3	A
			PM	60	2	3,170	26.4	D	65	1	360	5.5	A
SR 237	Great America to North First	EB	AM	35	2	3,570	51.0	E	65	1	390	6.0	A
			PM	60	2	2,520	21.0	C	65	1	910	14.0	B
SR 237	North First to Zanker	EB	AM	60	2	2,650	22.1	C	65	1	200	3.1	A
			PM	20	2	3,200	80.0	F	60	1	1,420	23.7	C
SR 237	Zanker to I-880	EB	AM	60	3	5,550	30.8	D	65	1	330	5.1	A
			PM	10	3	4,930	164.3	F	20	1	1,650	82.5	F
I-880	South of Montague	NB	AM	25	2	2,830	56.6	F	N/A	N/A	0	N/A	N/A
			PM	15	2	3,050	101.7	F	N/A	N/A	0	N/A	N/A
I-880	Montague to Tasman	NB	AM	65	3	3,450	17.7	C	N/A	N/A	0	N/A	N/A
			PM	15	3	4,030	89.6	F	N/A	N/A	0	N/A	N/A
I-880	Tasman to SR 237	NB	AM	65	3	2,350	12.1	B	N/A	N/A	0	N/A	N/A
			PM	15	3	4,080	90.7	F	N/A	N/A	0	N/A	N/A
I-880	SR 237 to Dixon Landing	NB	AM	65	3	3,590	18.4	C	N/A	N/A	0	N/A	N/A
			PM	10	3	4,410	147.0	F	N/A	N/A	0	N/A	N/A
US 101	South of Trimble	NB	AM	25	3	4,900	65.3	F	60	1	1,560	26.0	D
			PM	60	3	6,230	34.6	D	65	1	340	5.2	A
US 101	South of Trimble	SB	AM	65	3	4,210	21.6	C	65	1	510	7.8	A
			PM	30	3	4,790	53.2	E	60	1	1,790	29.8	D
I-880	Dixon Landing to SR 237	SB	AM	60	4	6,030	25.1	D	N/A	N/A	0	N/A	N/A
			PM	55	4	7,770	35.3	D	N/A	N/A	0	N/A	N/A
I-880	SR 237 to Tasman	SB	AM	60	3	3,750	20.8	C	N/A	N/A	0	N/A	N/A
			PM	65	3	2,800	14.4	B	N/A	N/A	0	N/A	N/A

TABLE 8.10-2
Freeway Segments Levels of Service – Existing Condition

				Mixed Flow Lanes					HOV Lanes				
Freeway	**Segment**	**Direction**	**Peak Hour**	**Ave. Speed[1]**	**# of Lanes**	**Volume[1]**	**Density[2]**	**LOS**	**Ave. Speed[1]**	**# of Lanes**	**Volume[1]**	**Density[2]**	**LOS**
I-880	Tasman to Montague	SB	AM	65	3	3,710	19.0	C	N/A	N/A	0	N/A	N/A
			PM	15	3	3,920	87.1	F	N/A	N/A	0	N/A	N/A
I-880	South of Montague	SB	AM	60	2	3,770	31.4	D	N/A	N/A	0	N/A	N/A
			PM	10	2	2,310	115.5	F	N/A	N/A	0	N/A	N/A
SR 237	I-880 to Zanker	WB	AM	15	3	4,350	96.7	F	60	1	1,950	32.5	D
			PM	60	3	5,360	29.8	D	65	1	550	8.5	A
SR 237	Zanker to North First	WB	AM	60	2	3,880	32.3	D	65	1	570	8.8	A
			PM	60	2	2,910	24.4	D	65	1	280	4.3	A
SR 237	North First to Great America	WB	AM	60	2	4,140	34.5	D	65	1	390	6.0	A
			PM	60	2	2,940	24.5	D	65	1	850	13.1	B
SR 237	Great America to Lawrence	WB	AM	60	2	2,740	22.8	C	65	1	200	3.1	A
			PM	60	2	3,210	26.8	D	65	1	1,070	16.5	C
SR 237	Lawrence to Mathilda	WB	AM	60	2	2,570	21.4	C	65	1	410	6.3	A
			PM	55	2	4,020	36.5	D	65	1	930	14.3	B

[1] Source: U.S. DataPort PDZ DEIR Table 8.
[2] Density is passenger cars per hour per lanes

The San Jose International Airport, which is owned and operated by San Jose, serves as the primary commercial airport for the greater San Jose metropolitan area. The airport is located in north San Jose, approximately 6 miles south of the project site.

8.10.1.5 Bicycle and Pedestrian Facilities

There are county-designated bike paths west of the project site located along the Guadalupe River and south of SR 237 between Lafayette Street and North First Street. These bike paths may also be used by pedestrians. Bike routes are designated on Tasman Drive west of Zanker Road, along Lafayette Street, and McCarthy Boulevard between Montague Expressway and Bellew Drive.

The Alviso Master Plan shows Zanker Road as a Planned Transportation Bicycle Network Street. Zanker Road is planned to have a bicycle lane at the time the roadway is improved to full City standards.

Pedestrian facilities in the Alviso and North San Jose areas consist primarily of sidewalks along the streets in most residential and commercial areas, as well as the aforementioned bike/pedestrian paths. Sidewalks are found along many of the previously described local roadways in the study area and along the local residential streets and collectors west of the WPCP. There is currently no sidewalk along Zanker Road in the vicinity of the site.

8.10.2 Environmental Consequences

8.10.2.1 Significance Criteria

Under California Environmental Quality Act (CEQA) Guidelines Appendix G(1), a project will normally have a significant impact if it will "cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system." Estimated changes to daily average and peak traffic due to the project implementation are expected to be negligible.

8.10.2.2 Operation Phase Impacts

The proposed project will generate approximately 20 trips per day to the facility. The project is expected to employ 20 full-time employees. Four operators will work per shift; two shifts per day, 3 to 4 days per week. Access to the project site for the operation phase will be the south access from Zanker Road.

The SCR system will require the use of aqueous ammonia, which will likely be stored in one 10,000-gallon storage tank for a maximum onsite quantity of 10,000 gallons. During plant operations, trucks will deliver aqueous ammonia to the project site with one delivery per week. Aqueous ammonia is considered a potential inhalation hazard. According to Division 13 Section 31303 of the California Vehicle Code, the transportation of hazardous materials will be on the state or interstate highways that offer the shortest overall transit time possible. Division 14.3 Section 32105 of the Vehicle Code specifies that unless there is not an alternative route, every driver of a vehicle transporting inhalation hazards shall avoid, by prearrangement of routes, driving into or through heavily populated areas, congested thoroughfares, or places where crowds are assembled.

Deliveries of hazardous materials will be limited. Delivery of these materials will occur over prearranged routes and will be in compliance with all laws, ordinances, regulations and standards (LORS) governing the safe transportation of hazardous materials. Transporters of inhalation hazardous or explosive materials must contact the CHP and apply for a Hazardous Material Transportation License. Upon receiving this license, the shipper will obtain a handbook, which will specify the routes approved to ship inhalation hazardous or explosive materials. Operating convenience is not a consideration. The exact route of the inhalation or explosive material shipment will not be determined until the shipper contacts the CHP and applies for a license. These activities would not result in a significant impact on the local transportation system. Table 8.10-3 presents the expected hazardous materials delivery schedule for the more frequently delivered materials, including container type and size.

TABLE 8.10-3
Hazardous Materials Transportation Requirements

Trade Name	Chemical Name	CAS Number	Maximum Quantity Onsite	Delivery Quantity/ Method/Schedule
Acutely Hazardous Materials				
Aqueous Ammonia	Aqueous Ammonia	7664-41-7 (NH_3)	10,000 gal.	8,000 gallon/Tanker Truck/1 delivery per week
Hazardous Materials				
Cleaning Chemicals/Detergents	Various	None	100 gal.	Pint/Gallon/5-Gallon Containers/Truck/Once a Month
Diesel No. 2	Oil	None	500 gal.	300 gallon/Tanker Truck/1 delivery per calendar quarter
Hydraulic Oil	Oil	None	1, 000 gal.	55-gallon drum/Truck/once a calendar quarter
Lubrication Oil	Oil	None	30,000 gal.	1,000 gallon/Tanker Truck/1 delivery per calendar quarter
Mineral Insulating Oil	Oil	8012-95-1	100,000 gal.	1,000 gallon/Tanker Truck/1 delivery per calendar quarter
Sulfur Hexafluoride	Sulfur Hexafluoride	2551-62-4	200 lb.	50 to 100 pound bags on a pallet/Truck/1 delivery a week

The following actions would avoid nuisance problems associated with truck traffic:

- Shippers of hazardous materials, including inhalation hazards, will adhere to all applicable LORS for the transport of hazardous materials.
- Shipment of hazardous materials will occur during business hours, but to the extent possible, during off-peak traffic periods. Depending on the hazardous materials, police and fire departments will be notified prior to transport of shipment.
- Shippers will maintain mufflers, brakes, and secure all loose items on trucks to minimize noise and ensure safe operation.

Transportation effects associated with plant operations will not be significant for the following reasons:

- Visits by trade persons, vendors, consultants, and other non-plant personnel are expected to be minimal and would likely occur primarily during non-peak commute periods.
- Deliveries of hazardous materials will be limited. Delivery of these materials will occur over prearranged routes and will be in compliance with all laws, ordinances, regulations and standards (LORS) governing the safe transportation of hazardous materials.

8.10.2.3 Construction Phase Impacts

Construction will take place over approximately 4 to 6 month construction period, beginning December 2001 and concluding in May 2002. It is anticipated that construction workers required will be drawn from the local labor pool in Santa Clara County. Zanker Road, Tasman Drive, North First Street, Montague Expressway, SR 237, I-880, and U.S. 101 are likely to be the primary roadways to and from the project site. As primary access roads to the site, Zanker Road and the two proposed access roads to the site will experience the greatest volume of construction traffic. The primary construction access to the site will be the Roadway approved in the U.S. Dataport EIR Zanker Road.

Two construction shifts will be used to expedite the construction. The average, non-peak, daily workforce during construction including construction, testing and plant staff is estimated to be 200 workers. Based on 1990 census data, the average automobile occupancy (AVO) is estimated to be 1.3 persons per vehicle during commute hours in Santa Clara County and in San Jose. Using this occupancy rate, an additional 308 daily trips and 154 trips during the p.m. peak hour will be generated by average, non-peak construction average with a reduction in trips as the construction reaches completion. All vehicles will park off of public roadways in the staging and parking areas of the construction site.

The peak workforce during construction is estimated to be 311 people. Using an AVO estimated to be 1.3 persons per vehicle during commute hours, the estimated trips per day is 477 trips per day and the estimated p.m. peak hour trips is 238 trips during the peak construction period as shown in Table 8.10-4.

TABLE 8.10-4
Total Daily Construction-Related Vehicle Trip Generation [a]

Average Work Force	Average Daily Vehicle Trips	Peak Workforce	Peak Daily Vehicle Trips
200 workers	308	311 workers	477

[a] This analysis assumes a 1.3 Average Vehicle Occupancy (AVO).

Generally, only small quantities of hazardous materials will be used during the construction period as described in Section 8.12, Hazardous Materials Handling. They may include gasoline, diesel fuel, motor oil, hydraulic fluid, solvents, cleaners, sealants, welding flux, various lubricants, paint, and paint thinner. There are no plans to have any batch plants (asphalt or concrete) onsite. No acutely hazardous materials will be used or stored onsite during construction. Because of the small quantities of hazardous materials involved, separate truck deliveries of hazardous materials during construction are unlikely.

Access to the pipeline construction areas will be along existing roads and rights-of-way and access roads. Damage to existing roads by construction activity will be repaired to original, or as near original condition as possible.

With the proposed gas line route and water discharge line, no public roadways will be crossed. The linear routes for Phase I will be along the access roads on the property site. All road crossing construction activities will be in accordance with local, state, and federal regulatory requirements and specifications. Adequate barricades and lights will be provided around excavations at crossings in accordance with Caltrans "Manual of Traffic Controls for Construction and Maintenance of Work Zones" and California Vehicle Code Section 21400.

Significant effects on the local transportation system are not expected from operation and construction activities for the following reasons:

- Due to the relatively small size of the peak construction workforce and truck traffic, the only noticeable impact will be localized near the construction site. Table 8.10-8 shows projected daily volumes and LOS under the worst case. As indicated in the table, the only segment that experiences a reduction in the LOS (with the proposed access roads) is Zanker Road at the ramp terminals of SR 237. The change from LOS B to LOS C still meets the CMP standards.
- Construction workers usually begin work early (typically 6:00 a.m.) and finish late, limiting the number of vehicles during peak hour traffic periods and thus reducing potential traffic effects.

TABLE 8.10-5
Estimated Daily and PM Peak Hour Construction Volumes and LOS for the Access Roads

Street Segment	Construction PM Peak Volume	Construction Daily Peak Volume	PM Peak LOS without Project	PM Peak LOS with Project Construction
Zanker Rd./SR 237 (N)*	233	466	B	C
Zanker Rd./SR 237 (S)*	133	251	B	D
Zanker Rd./Tasman Dr.	19	38	D	D
Zanker Rd./Monague Expway *	14	28	F	F
SR 237 from North First to Zanker (EB)	15	95	F	F
SR 237 from Zanker to I-880 (EB)	100	120	F	F
SR 237 from Zanker to North First (WB)	80	95	D	D
SR 237 from I-880 to Zanker (WB)	20	120	D	D

* Denotes CMP intersection.

8.10.3 Laws, Ordinances, Regulations and Standards

Laws, ordinances, regulations and standards related to traffic and transportation are summarized in Table 8.10-6 and described in the following subsections. Table 8.10-6 also lists the appropriate agency contract for each of the LORS. Table 8.10-7 presents the permit schedule.

8.10.3.1 Federal

The federal law that applies to the project is the Hazardous Materials Transportation Act of 1974, 49 Code of Federal Regulations (CFR) 397.9, which directs the U.S. Department of Transportation to establish criteria and regulations for the safe transportation of hazardous materials.

8.10.3.2 State

State Laws that would apply to this project include the following (State of California 1999):

- California Vehicle Code Section 35780 requires the approval for a permit to transport oversized or excessive loads over state highways. The project will conform to Vehicle Code Section 35780 by requiring that shippers obtain a Single Trip Transportation Permit for oversized loads, as required by Caltrans, for each vehicle.
- California Vehicle Code Section 31303 requires that the transportation of hazardous materials be on a state or interstate highways that offer the shortest overall transit time possible. The project will conform to Vehicle Code Section 31303 by requiring that shippers of hazardous materials use the shortest route possible to and from the project site.
- California Vehicle Code Section 32105 requires that shippers of inhalation or explosive materials must contact the CHP and apply for a Hazardous Material Transportation License. Upon receiving this license, the shipper will obtain a handbook that will specify the routes approved to ship inhalation hazards. The project will conform to California Vehicle Code Section 32105 by requiring shippers of inhalation or explosive materials to contact the CHP and obtain a Hazardous Materials Transportation License.

California State Planning Law, Government Code Section 65302, requires each city and county to adopt a General Plan, consisting of seven mandatory elements, to guide its physical development. Section 65302 (b) requires that a circulation element be one of the mandatory elements. The scope of a circulation element consists of the "general location."

8.10.3.3 Local

Santa Clara County Congestion Management Program

The Santa Clara Valley Transportation Authority (VTA) oversees the Santa Clara County *Congestion Management Program* (CMP), last updated in May 1998. The relevant State legislation requires that all urbanized counties in California prepare a CMP in order to obtain each county's share of the increased gas tax revenues. The CMP legislation requires that each CMP contain five mandatory elements: 1) a system definition and traffic level of service (LOS) standard element; 2) a transit service and standards element; 3) a

TABLE 8.10-6
Laws, Ordinances, Regulations, and Standards

LORS	Citation	Applicability	Section where discussed	Agency/Contact
Federal				
Regulations for the safe transport of hazardous materials	49 CFR 397.9	Requires states to regulate transport of oversized or excessive loads over State highways.	8.10.4.1	Under states jurisdiction
State				
Transport oversized or excessive loads over State highways	California Vehicle Code Section 35780	Requires approval for a permit to transport oversized or excessive loads over State highways. Enforced by the California Highway Patrol.	8.10.2.2 8.10.5.2	Caltrans Harold Burnett (Single Trip) (916) 322-1297 Dee Garcia (Annual) (916)322-1297
Transport hazardous materials on Interstate highways	California Vehicle Code Section 31303	Requires that the transportation of hazardous materials be on state or interstate highways that offer the shortest overall transit time possible.	8.10.2.2 8.10.2.3 8.10.4.2	California Highway Patrol Meg Plenka (916) 445-1865
Shipping of inhalation or explosive materials	California Vehicle Code Section 32105	Requires that shippers of inhalation or explosive materials contact the California Highway Patrol and apply for a Hazardous Material Transportation License. Upon receiving this license, the shipper will obtain a handbook, which will specify the routes approved to ship inhalation hazards.	8.10.2.2 8.10.2.3 8.10.5.2	California Highway Patrol Meg Plenka (916) 445-1865
Requirement to have a General Plan	California Government Code Section 65302	Project must conform to the General Plan	8.10.5.3	
Local				
	Mitigation Plan	Coordinates with the local agencies to develop a mitigation plan and schedule to repair the roadways along the construction routes	8.10.4.1	San Jose, Public Works (408) 277-5161
	San Jose General Plan (1994)	Provides for the long-range planning and development of the City's roadway system and the efficient movement of people and goods throughout the city.	8.10.5.3	
	California Vehicle Code Sections 35780, 35781, and 35795	Transportation permit for oversized vehicles	8.10.5.3	San Jose, Street and Traffic Transportation Permit (408)277-4304
	California Streets and Highway Code, Division 2 Chapter 5.5 Sections 1460-1470	Encroachment permit	8.10.5.3	San Jose, Public Works (408)277-5161

TABLE 8.10-6
Laws, Ordinances, Regulations, and Standards

LORS	Citation	Applicability	Section where discussed	Agency/Contact
	Santa Clara General Plan (1995)	Set standards for local and regional Transportation System Management, Travel Demand Management, and Transportation facilities	8.10.1.3	
	Santa Clara Valley Transportation Authority	Congestion management program for County and cities within. Establishes standards and programs for regional transportation facilities	8.10.1.3	

TABLE 8.10-7
Permit Schedule for Traffic and Transportation

Permit	Schedule
Transport oversized or excessive loads over state highways from State Agency	Obtain when necessary, 2 hour processing time (single trip) to 2 weeks (annual trip).
Transportation permit for oversized vehicles from State Agency	Obtain when necessary, same day processing.
Transportation permit for oversized vehicles or excessive loads from San Jose	Obtain when necessary, same day approval by Street and Traffic Department.

transportation demand management and trip reduction element; 4) a land use impact analysis element; and 5) a capital improvement element. Santa Clara County's CMP includes the five mandated elements and three additional elements, including: a county-wide transportation model and database element, an annual monitoring and conformance element, and a deficiency plan element.

The Santa Clara County CMP includes subregional roadways within North San Jose, Santa Clara and Milpitas that are identified as CMP road facilities.

The project will not be inconsistent with the provisions of the Santa Clara Valley Congestion Management Plan.

The transportation and circulation element of the San Jose General Plan (1994) sets forth policies that are applicable to the project. They are as follows:

- The City's level of service standards for the state highway system and specific routes of regional significance shall be those standards adopted in the Santa Clara Congestion Management Program.
- The City shall require all new development projects to analyze their contribution to increased traffic and to implement improvements necessary to address the increase.
- The California Streets and Highways Code Division 2 Chapter 5.5 Sections 1460-1470 mandates that an encroachment permit be obtained from the City Public Works Department if there is an opening or excavation for any purpose in any highway.

8.10.4 References

California Department of Transportation (Caltrans). 1998. 1997 Accident Summary on California State Highways.

Caltrans. 2001. 1998 Annual Average Daily Truck, Traffic on the California State Highway System.

Caltrans. 2001. 2000 Traffic Volumes on the California State Highway System.

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City of San Jose. 2000. Draft Environmental Impact Report for the U.S. Dataport Planned Development Zoning. November 2000.

City of San Jose, 2001. Final Environmental Impact Report for the U.S. DataPort Planned Development Zoning.

County of Santa Clara. 1994 Santa Clara County General Plan. Charting a course for Santa Clara County's Future: 1995-2010.

Eychner, Mr. 2001. Personal Communication, Eychner, San Jose Street and Traffic Department.

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San Jose Department of City Planning and Building. 1994. San Jose 2020 General Plan.

Santa Clara Valley Transportation Authority, 1997. Traffic Level of Service Analysis Guidelines.

Santa Clara Valley Transportation Authority, 1998. Transportation Impact Analysis Guidelines.

Santa Clara County Congestion Management Plan, May 1998.

LEGEND

PROJECT LOCATION

N

1000 0 1000 Feet

SCALE IS APPROXIMATE

FIGURE 8.10-1
STUDY AREA ROADWAY NETWORK

APPLICATION FOR CERTIFICATION FOR LOS ESTEROS CRITICAL ENERGY FACILITY

CH2MHILL

CH2M Hill RDD ArcView Project File \\Thor\Cart1\rddgis\san_jose\sanjose.apr 9:52 p.m. 07-31-2001

8.11 Visual Resources

Visual resources are the natural and cultural features of the landscape that can be seen and that contribute to the public's appreciative enjoyment of their experience of the environment. Visual resource or aesthetic impacts are generally defined in terms of a project's physical characteristics and potential visibility and the extent to which the project's presence would change the perceived visual character and quality of the environment in which it would be located.

Following the CEC Guidelines for preparing visual impact assessments for AFCs, this section documents the visual conditions that now exist in the project area and evaluates the implications that the proposed project would have for the public's experience of the project area's aesthetic qualities. Figures 8.11-1 and 8.11-2 show the location of the viewsheds, and key observation points referenced in the section. The section also includes an assessment of the project's cumulative impacts and a discussion of the federal, state, and local laws, ordinances, regulations, and standards that are relevant to the area's visual resources and that are thus applicable to the project.

Much of the data presented in this section and used to evaluate the visual resources impacts of the LECEF project were taken from the Draft Environmental Impact Report (EIR) and Final EIR (FEIR) for the U.S. Dataport Planned Development Zoning Project (referred to as the "EIR"). The EIR addressed the rezoning and prezoning of a 174-acre parcel in connection with the development of the U.S. Dataport Project. The U.S. Dataport project was a combined 49 MW energy center (referred to as the Central Reliability Energy Center, CREC) and a 2.227 million gross square foot data center. The LECEF project is be considered to be a modification, under CEQA, to the U.S. Dataport project. In response to guidance from the San Jose City Council, the LECEF has been changed to provide peaking units that, in the interim period before construction of the data center campus, will provide power that can help address current electricity shortages. The development of the data center has been separated from the development of Phase I of the LECEF and, therefore, the data center is not included in the analysis of this project. The LECEF will be developed on a portion of the site that was originally approved for development of the U.S. Dataport facility. The relationship of the LECEF site to the area that remains for development of the data center is indicated on Figure 8.11-2.

8.11.1 Affected Environment

8.11.1.1 Project Setting

The various components of the LECEF will be developed in an area near the Alviso community in the northern portion of the City of San Jose. This part of San Jose encompasses a large area of flat bay plain lands located around the southern edge of San Francisco Bay . Although the resident population in this area is relatively low, this portion of San Jose is seen by large numbers of people as they travel along Interstate 880, which is located along this area's eastern edge, and State Route (SR) 237, a highway built to freeway standards that passes east-west through the area's center. The overall landscape pattern consists of flat, open plains dissected by bands of riparian vegetation growing along the area's sloughs and creeks. On the north, the plain is fringed by a several -mile wide band of wetlands along the bay. At present, the area has a mix of open space lands, land-extensive infrastructure facilities, and scattered industrial, commercial, and residential development. The area is now undergoing rapid development, which is in the process of filling in many of the vacant lands and creating a landscape dominated by complexes of large, boxy industrial, office, and commercial structures surrounded by extensive areas of landscaped parking.

Over 3,600 acres of the wetlands along the bay and within San Jose's sphere of influence are permanently preserved as open space as part of the Don Edwards San Francisco Bay National Wildlife Refuge. The Newby Island landfill occupies an area adjacent to the bayside wetlands. The landfill includes a large covered trash mound that is highly visible in the surrounding area. In the area between the project site and the wetlands to the north, a vast area has been developed with rectangular sludge drying ponds used in conjunction with the San Jose/Santa Clara Water Pollution Control Plant (WPCP), which is located along Zanker Road to the northwest of the project site. The lands lying between the project site and Zanker Road are a part of the water pollution control operation. These lands, which are referred to as the WPCP buffer lands are used as hay fields and are irrigated with treated wastewater. Additional WPCP buffer lands are located on the west side of Zanker Road, south of the Water Pollution Control Plant.

Alviso, which lies 1.8 mile to the northwest of the project site at the point where the Guadalupe River enters Alviso Slough began as a bay port that served the Santa Clara Valley in the 19th century. After its port function declined, Alviso had, for many years, been an isolated community of homes and businesses This area was incorporated into the City in the 1968, and in recent decades, the City has been upgrading the area's infrastructure and planning for development of the community and the open lands around it with a mix of residential, commercial, and industrial development. Projects now under construction or approved for the Alviso area include 1.2 million square feet of office space for the Palm Corporation and a 2.5 million square foot industrial campus for Cisco Systems.

The area south of SR 237 has been developed with a mix of land uses, including a large mobile home community, the Valley Transit Authority's Cerone bus maintenance facility which includes a number of large bus barns, and a number of technology parks consisting of several story buildings surrounded by landscaped parking.

To the east of the project site, the lands on the east side of Coyote Creek fall within the boundaries of the City of Milpitas. In this area, much of the land north and south of SR 237 has been developed with large scale commercial, office, and industrial park developments, and further development of the remaining open lands has been approved. For a detailed description of these projects, refer to section 8.4.5 in the Land Use chapter.

The California Public Utilities Commission has recently approved PG&E's proposed Northeast San Jose Transmission Reinforcement Project, which would include construction of a combined transmission and distribution substation, to be known as the Los Esteros Substation on a 24 acre area to the north of and immediately adjacent to the LECEF site. The location of this site is indicated on Figure 8.11-2. In addition to construction of the substation, the PG&E project will also include construction of a 7.3-mile-long, 230 kV double-circuit transmission line to connect the Los Esteros Substation to the Newark Substation.

8.11.1.2 Project Site

8.11.1.2.1 LECEF

The LECEF project site (see Figure 8.11.2) is a 15.3 acre portion of the larger site that was approved by the City of San Jose for development of the U.S. Dataport project. The site is essentially flat, with little variation in elevation. Figure 8.11-3a is a view toward the site from SR 237 at a point to the southwest of the site, and Figure 8.11-4a is a view of the site from Zanker Road, at a point northwest of the site. The property on which the LECEF is located was used as a plant nursery for many years, and it is still intensively developed with greenhouses, storage buildings, and approximately 10 structures including trailers, modular structures, and wood framed buildings that are used for residential purposes. The greenhouses and plant sheds have not been used for many years and are in a state of partial dilapidation. The dense complex of greenhouses on the site can be seen in the views from both SR 237 and Zanker Road. As the photos suggest, the site has a highly developed appearance, even though it lies in the midst of what is now an open landscape.

8.11.1.2.2 Transmission Line Route

LECEF's preferred transmission line will consist of a short, 200 foot underground connection between the project's switching station and the proposed Los Esteros Substation which will be developed adjacent to the project site's northern boundary. PG&E may require the interconnection to be above grade and if necessary, the LECEF transmission line would be 200 feet of above ground line that would pass from the LECEF site directly into the PG&E substation. The alignment of the proposed transmission link is indicated on Figure 2.1-1. The existing visual conditions of the transmission line route are essentially the same as those of the project site and can be characterized as consisting of a complex of deteriorating greenhouse structures.

8.11.1.2.3 Natural Gas Line Route

The natural gas needed by the LECEF will be supplied by a new 600-foot long natural gas line that will extend southward from the site until reaching the existing PG&E gas lines located adjacent to the northern edge of SR 237. The gas line's right-of-way will be located at the western edge of the area now occupied by greenhouses. Because the line will be buried underground, it will not a visible element of the landscape.

8.11.1.2.4 Water and Sewer Lines

Recycled water used for cooling will be supplied by SBWR, and will be delivered from the nearby WPCP. Plant process water will be supplied via an 1,000-foot-long pipeline located just west of the project site on adjacent WPCP buffer land. The project will use recycled water in the cooling towers and for landscape irrigation. Plant wastewater will be returned to the WPCP via a 2,700 foot-long pipeline located within the right-of way of the proposed primary access road. Sanitary sewage will be gathered and disposed with piping and a lift pump to the plant waste-water discharge system . The locations of these pipelines are indicated on Figure 2.1-1. The area under which the water and sewer lines will pass is the flat hayfield visible in the foreground of the view represented by Figure 8.11-4a. Because the water and sewer lines will be buried underground, they will not be visible.

A potable water pipeline to the site is not being proposed at this time.

8.11.1.3 Project Site Visibility

Figure 8.11-1 provides a generalized indication of the project viewshed, that is, the areas from which the proposed facility is likely to be visible. Because of the area's flat and often open landscape, the project's taller structures have the potential to be seen over a large area. However, as a practical matter, the boundaries of the area of potential visibility were set at 3 miles from the project site. This figure was selected because elements of a view that are 3 miles or more away are considered to be a part of the background, the landscape zone in which little color or texture is apparent, colors blur into values of blue or gray, and individual visual impacts become least apparent (USDA Forest Service 1973, pp. 56-57). Given the moderate height of the project's structures (the tallest elements, the exhaust stacks would be no more than 90 feet high, and most elements would be much shorter), and the developed character of the overall landscape setting, at three miles distance, the plant's features would be relatively small elements of a large and complex landscape scene which includes many other developed features. Although Figure 8.11-1 suggests that the project's viewshed would extend out a full three miles in all directions, there are many areas in which trees, buildings, and other foreground obstructions will screen views toward the project site. As the general area continues to develop, such obstructions of views toward the project will become more prevalent. At such time as the U.S. Dataport project is developed, the Dataport's buildings will greatly reduce the visibility of the LECEF's features in views from the south, east, and north.

8.11.1.4 Sensitive Viewing Areas and Key Observation Points

To structure the analysis of the project effects on visual resources, an identification was made of the view areas most sensitive to the project's potential visual impacts. Two Key Observation Points (KOPs) were selected for the development of photo simulations that could be used as a basis for visualizing the plant's potential effects. In evaluating the sensitivity of the viewing areas potentially affected by the project, consideration was given to distance from the project site, numbers of viewers, and the presence of residential or recreational uses. The areas selected were, a viewpoint along SR 237 east of Zanker Road (KOP 1), and a viewpoint along Zanker Road to the northwest of the plant site. These viewpoints, which are described in more detail below, were selected because they provide open views across the site that have some degree of scenic interest, and because they are potentially seen by large numbers of people.

No residential views were selected for analysis. At present, there are several residences located on the U.S. Dataport and LECEF sites. However, because these residences will be removed as a part of the implementation of the LECEF and U.S. Dataport projects, they were not identified as sensitive view areas for the purposes of this analysis. Aside from these residences, the residences closest to the site are those in the mobile home community located 0.6 miles southwest of the project site. From this area, views toward the site are screened to a large degree by foreground elements and by the embankment of the Zanker Road crossing of SR 237.

Although trails are planned in the area, there are no developed trails at present. Because trails are not a part of the existing environment, no trail views were selected for analysis. The Santa Clara County General Plan Countywide Trails Policies and Map (1995), the San Jose 2020 General Plan Scenic Routes and Trails Diagram, and the San Francisco Bay

Trail Map all identify a planned trail alignment in the corridor along Coyote Creek east of the LECEF site. Both the County Trails Map and the San Francisco Trail Map also indicate a planned trail alignment that cuts east-west across the U.S. Dataport site, connecting the Coyote Creek segment of the trail with a trail that continues along the edges of Zanker and Los Esteros Roads into Alviso. No actual trail development in this area has yet taken place. With the City's approval of the plan for the U.S. Dataport project, a final trail alignment for the U.S. Dataport area was defined in which a trail alignment along the eastern edge of Coyote Creek would connects with a trail to be located along the southern edge of the U.S. Dataport site that would continue along the northern frontage of SR 237 until reaching Zanker Road, where it would continue northward along the edge of the road right-of-way. This trail alignment is indicated on Figure 8.11-2.

To respond to the CEC's requirement that an assessment be made of the visual quality of the landscapes potentially affected by the project, the discussion of the views seen from the KOPs includes ratings of the visual quality of the landscapes that they represent. These ratings were developed based on a series of in-field observations carried out during the period from May through July, 2001, review of photos of the affected area, review of methods for assessment of visual quality, and review of research on public perception of the environment and scenic beauty ratings of landscape scenes. The final assessment of the visual quality of the views from each of the KOPs was made based on professional judgement that took a broad spectrum of factors into consideration. The factors considered included evaluation of:

- Natural features, including topography, water courses, rock outcrops, and natural vegetation;
- The positive and negative effects of man-made alterations and built structures on visual quality; and
- Visual composition, including assessment of the complexity and vividness of patterns in the landscape.

The final ratings assigned fit within the rating scale summarized in Table 8.11-1. This scale, which is based on the scale developed for use with an artificial intelligence system for evaluation of landscape visual quality (Buhyoff et al., 1994), provides a useful framework for the qualitative ratings because it is based on research on the ways in which the public evaluates visual quality, and provides an intuitively meaningful description of what it means for a landscape to have been assigned a particular rating.

TABLE 8.11-1
Landscape Visual Quality Scale Used in Rating the Areas Potentially Affected by the Los Esteros Critical Energy Facility

Rating	Explanation
Outstanding Visual Quality	A rating reserved for landscapes with exceptionally high visual quality. These landscapes will be significant regionally and/or nationally. They usually contain exceptional natural or cultural features that contribute to this rating. They will be what we think of as "picture post card" landscapes. People will be attracted to these landscapes to be able to view them.
High Visual Quality	Landscapes that have high quality scenic value. This may be due to cultural or natural features contained in the landscape or to the arrangement of spaces contained in the landscape that causes the landscape to be visually interesting or a particularly comfortable place for people. These are often landscapes which have high potential for recreational

TABLE 8.11-1
Landscape Visual Quality Scale Used in Rating the Areas Potentially Affected by the Los Esteros Critical Energy Facility

Rating	Explanation
	activities or in which the visual experience is important.
Moderately High Visual Quality	Landscapes which have above average scenic value but are not of high scenic value. The scenic value of these landscapes may be due to man-made or natural features contained within the landscape, to the arrangement of spaces, in the landscape or to the two-dimensional attributes of the landscape.
Moderate Visual Quality	Landscapes, which have, average scenic value. They usually lack significant man-made or natural features. Their scenic value is primarily a result of the arrangement of spaces contained in the landscape and the two-dimensional visual attributes of the landscape.
Moderately Low Visual Quality	Landscapes that have below average scenic value but not low scenic value. They may contain visually discordant man-made alterations, but the landscape is not dominated by these features. They often lack spaces that people will perceive as inviting and provide little interest in terms of two-dimensional visual attributes of the landscape.
Low Visual Quality	Landscapes with low scenic value. The landscape is often dominated by visually discordant man-made alterations; or they are landscapes that do not include places that people will find inviting and lack interest in terms of two-dimensional visual attributes.

Note: Rating scale based on Buhyoff et al., 1994.

8.11.1.4.1 State Route 237 and KOP 1

Figure 8.11-3a represents the existing view from KOP 1, a viewpoint located on eastbound SR 237 at a point just east of the interchange with Zanker Road. This viewpoint is the same as one of the viewpoints used in the EIR for analysis of the potential visual effects of the U.S. Dataport Project. For consistency with the photo image of this view presented in the EIR, the photo presented in Figure 8.11-3a was taken with a wide angle, 28 millimeter (mm) lens. This viewpoint is located approximately 0.30 mile southwest of the project site. This view is representative of the view seen by travelers as they head east on SR 237 toward the intersection with Interstate 880. The latest traffic counts (1998) for SR 237 in this area indicates a total two-direction Average Daily Traffic of 108,000 vehicles per day. At this point along the highway, the LECEF site is visible at the far left edge of the driver's normal 45° view cone. In Figure 8.11-3a, the site is visible as the flat area to the left of the center of the view in which the dense collection of greenhouses can be seen. The Scenic Routes and Trails Diagram of the San Jose 2020 General Plan designates SR 237 as a "Landscaped Throughway". However, the plan's policy specifying that "Any development occurring adjacent to Landscaped Throughways should incorporate interesting and attractive design qualities and promote a high standard of architectural excellence" does not apply to the project because the project site is not immediately adjacent to the freeway. Although the plan's "Landscaped Throughway" provisions do not, strictly speaking, apply to the site, the views from KOP 1 and other nearby areas of SR 237 are moderately sensitive because of their visibility to very large numbers of travelers.

As suggested by Figure 8.11-3a, the near foreground of the view experienced by eastbound travelers is dominated by the roadway, the road divider, and the large informational signs. To the north of the freeway, a portion of the open WPCP buffer lands are visible, and beyond these open lands, the greenhouses that now occupy the project site can be seen. The high ridgeline of the East Bay hills, including the 2,500 foot high summit of Mission Peak, is visible in the background. The high, steep, natural-appearing ridgeline is the most visually dominant element in the view, and gives the view a relatively high level of visual interest. However, the presence of the tall and visually prominent light standards, transmission lines, and utility poles as well as the roadway and roadway appurtenances in the near foreground all detract somewhat from the view's overall visual quality. Applying the Buhyoff scale (Table 8.11-1), this view's visual quality would be rated as moderately high.

8.11.1.4.2 Zanker Road and KOP 2

Figure 8.11-4a represents the view from KOP 2, a viewpoint on Zanker Road at a point approximately 0.35 mile northwest of the project site. The photograph presented in this figure was taken with a wide-angle (35 mm) lens in order to encompass all of the project site and its surrounding context. This viewpoint was selected to represent the view of the project as seen from Zanker Road and across the open space provided by the WPCP buffer lands.. The project site is visible as the greenhouse complex in the middleground in the center of the right half of the view. Zanker Road has an estimated Average Daily Traffic level of approximately 5,000 vehicles per day. Besides being a travel route to the San Jose/Santa Clara Water Pollution Control Plant and nearby solid waste disposal facilities, it also serves as an alternative access route to the community of Alviso and the Don Edwards San Francisco Bay National Wildlife Area. This view is the view looking directly east/southeast from the east side of Zanker Road, and is not a view that would be seen within the normal cone of vision of a person driving north or south on the roadway. This view also represents the view that would be seen by hikers or bicyclists using the trail segment that may some day be developed along the eastern edge of Zanker Road in conformance with the City of San Jose's current designation of future trail alignments in this area. Because of the moderate number of travelers, the fact that there are no residences or other stationary viewpoints in this area, the fact that this stretch of roadway does not have a formal scenic route status, the fact that no trails have yet been built in this area, and the fact that this view is outside normal cone of vision of drivers on this road, its sensitivity is moderately low.

As review of Figure 8.11-4a indicates, the dominant visual elements in this view at present are the flat, open hay field on the WPCP buffer lands and the ridgeline of the distant East Bay hills. In the middleground, the line of riparian vegetation along Coyote Creek and the greenhouses on the properties that will be used by the U.S. Dataport and LECEF projects form a band along the far edge of the WPCP buffer land hay field. Applying the Buyhoff visual quality scale (Table 8.11-1), the visual quality of this view would be rated as moderately high to high.

8.11.2. Environmental Consequences

8.11.2.1. Analysis Procedure

This analysis of the visual effects of changes that might be brought about by the LECEF Project is based on field observations, and review of the following information: local planning documents, project maps and drawings, photographs of the project area, computer-generated visual simulations from each of the KOPs, and research on design measures for integrating electric facilities into their environmental settings.

Page-size photographs are included to represent the "before" conditions from each KOP. Visual simulations were produced to illustrate the "after" visual conditions from each of these points, providing the viewer with a clear image of the location, scale, and visual appearance of the proposed project. The computer-generated visual simulations are the result of an objective analytical and computer modeling process. Computer rendering techniques were used to produce the simulated images of the views of the site as they would appear after development of the project. The images are accurate within the constraints of the available site and project data.

Site reconnaissance was conducted to view the site and surrounding area, to identify potential key viewpoints, and to take representative photographs of existing visual conditions. A single lens reflex (SLR) 35 mm camera was used to shoot site photographs.

For the views from viewpoints selected as KOPs, computer modeling and rendering techniques were used to produce the simulation images. Existing topographic and site data provided the basis for developing an initial digital model. The project engineers provided site plans and digital data for the proposed generation facility, and site plans and elevations for the components of the transmission system. These were used to create three-dimensional (3-D) digital models of these facilities. These models were combined with the digital site model to produce a complete computer model of the generating facility and portions of the overhead transmission system.

For each viewpoint, viewer location was digitized from topographic maps and scaled aerial photos, using 5 feet as the assumed eye level. Computer "wire frame" perspective plots were then overlaid on the photographs of the views from the KOPs to verify scale and viewpoint location. Digital visual simulation images were produced as a next step based on computer renderings of the 3-D model combined with high-resolution digital versions of base photographs. The final "hardcopy" visual simulation images that appear in this AFC document were produced from the digital image files using a color printer.

8.11.2.2 Impact Evaluation Criteria

The analysis of the project's impacts was based on evaluation of the changes to the existing visual resources that would result from the project's construction and operation. An important aspect of this analysis was evaluation of the "after" views provided by the computer-generated visual simulations, and comparison of them to the existing visual environment. In making the determination of the extent and implications of the visual changes, consideration was given to:

1. The specific changes in the affected visual environment's composition, character, and any specially valued qualities;
2. The affected visual environment's context;
3. The extent to which the affected environment contains places or features that have been designated in plans and policies for protection or special consideration; and
4. The numbers of viewers, their activities, and the extent to which these activities are related to the aesthetic qualities affected by the likely changes.

To make the determination of whether the Project's visual effects would be "significant" under the provisions of the California Environmental Policy Act (CEQA), reference was made to Appendix G of the State CEQA Guidelines. The CEQA Guidelines define a "significant effect" on the environment to mean a "substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the Project, including objects of historic or aesthetic significance (14 CCR, § 15382.) Appendix G of the Guidelines, under Aesthetics, lists the following four questions for lead agencies to address:

5. Would the Project have a substantial adverse effect on a scenic vista?
6. Would the Project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?
7. Would the Project substantially degrade the existing visual character or quality of the site and its surroundings?
8. Would the Project create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?

In addition, the CEQA Guidelines, under the Land Use and Planning section, pose the question of whether the Project would conflict with any applicable land use plan, policy, or regulation (including, but not limited to, a general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect.

8.11.2.2 Project Appearance—Proposed Project

8.11.2.2.1 LECEF

The four simple cycle LM 6000 combustion turbine generators and associated accessory equipment being proposed for installation on the project site are described in detail in Section 2.0, Project Description. Figures 2.1-1 and 2.2-1 in Section 2, Project Description, show the layout of the project equipment and the location of the associated electric transmission line, natural gas supply line, and water supply and return lines. Table 8.11-2 summarizes the dimensions of the peaking facility's major features.

TABLE 8.11-2
Dimensions of the Major Project Features

Feature	Height (feet)	Length (feet)	Width (feet)	Diameter (feet)
Turbine Generator Units	14.5	56.5	13.5	--
Upper Turbine Housings (mounted on top of Turbine Generator Units)	18.5	33	33	
Height from ground to top of Upper Turbine Housings	33			
Heat Recovery Steam Generator Shell	10-34	100	18	--
HRSG Shell Exhaust Stacks	90			10
Cooling Tower for Inlet Air Chillers (2 cells)		90	42	
Height to top of cooling tower deck	41			
Height from ground to tops of cones	47			
Service Building	32	96	84	
Water Tank	47			39

The exteriors of the turbine generators units, HRSG shells, and stacks will be treated with a neutral gray-taupe finish that has been selected to optimize for visual integration with the equipment in the adjacent Gilroy Co-Gen plant and with the surrounding vegetation and sky backdrop.

An 8-foot high sound wall will be installed around the southern and eastern sides of the site. The wall will be given a dull, neutral finish to minimize its visual contrast with its surroundings. On the site's northern and westerns sides, a chain link fence will be installed. The fence will be given a dulled finish to minimize reflectivity.

8.11.2.2.2 Landscaping

Landscaping will be installed around the perimeter of the project site at the time that construction is completed. Figure 8.11-5 presents the conceptual plan. The planting scheme will make use of a mix of two species of tall, fast-growing evergreen trees that will provide partial screening of the project's elements and integrate them into their landscape setting.

8.11.2.2.3 Lighting

The LECEF will require nighttime lighting for operational safety and security. To minimize the off-site impacts of this lighting, lighting at the facility will be limited to areas required for safety and security, and will be shielded from public view to the extent required. Lights will also be directed on-site so that significant light or glare will not be created. Fixtures of a non-glare type will be specified. In addition, the nighttime lighting system will include switches, timers, and sensors to minimize the time the lights are on in order to further reduce the potential for project lighting to be visible off-site.

8.11.2.2.4 Water-Vapor Plumes

Experience with plants of this type has demonstrated that the high velocity and temperature of the stack exhaust result in a quick dispersion of the stack plumes, minimizing the probability that a visible plume will be created above the stacks. Based on previous experience with these kinds of systems, it is fair to say that formation of visible plumes will be a rare occurrence related to unusual combinations of cold and damp conditions, and that when present, the plumes will be relatively small.

Each pair of the turbines will be equipped with a small cooling tower designed to cool the turbine's intake air to 60° F. These cooling towers play a very different role than that played by the much larger cooling towers at combined cycle plants, which have the job of cooling down the high temperature exhaust steam produced by the steam generation cycle. Because the amount of heat that each cooling tower has to remove from the intake air is a small fraction of the total amount of heat that a combined cycle cooling tower has to remove from the exhaust steam, the volume of water vapor that emanates from a single cycle cooling tower is a small fraction of the volume that would emanate from a combined cycle cooling tower. Because the volume of water vapor that will be produced by the project's cooling towers will be small, the frequency and size of any water vapor plumes that might be associated with these cooling towers will be limited. Furthermore, since the towers are designed to cool the turbines' intake air to approximately 60°F, the towers are not likely to be operated under meteorological conditions during which plumes would be likely to form.

8.11.2.2.5 Transmission System

The 200-foot transmission link associated with the project will be either underground or overhead. Because the underground transmission link would not be visible, it would not create any visual impacts. Because the overhead transmission line would be very short, and its support structures would set within the context of the generating plant and adjacent substation where they would blend in with the surrounding equipment, the transmission link's visual salience and thus visual impact would be very limited and less than significant.

8.11.2.2.3 Pipelines

The design features of the natural gas, recycled water supply, and industrial wastewater pipelines that would be built to serve the proposed project are described in Sections 6 and 7. Because these lines would be buried and the surface conditions restored, there would be no long-term changes to the visual environment.

Any visual effects associated with the pipelines would be restricted to the construction phase. During construction, the very short areas along the rights-of-way would be temporarily disrupted by machinery, excavated piles of dirt, construction vehicles, and other disturbances associated with pipeline construction. However, these effects would be minor and temporary, and would not be significant.

8.11.2.2.4 Construction

As detailed in Section 2.2.14, construction of the project from site preparation and grading to commercial operation is expected to take place during a period with a duration of only 30 days. During the construction period, the portion of the project site that has been set aside for Phase 2 development will be used as the construction laydown area. Because of the short duration of the construction period and the 0.3 mile distance of the construction site from the closest viewers, the construction impacts would not be significant.

8.11.2.3 Assessment of Visual Effects

8.11.2.3.1 State Route 237 and KOP1

Figure 8.11-3b is the simulation that represents the view from KOP 1 of the project as it would appear shortly after construction. In this simulation, the generator stacks are shown as being 125 feet in height. Since the time that the simulations were prepared, stack design has been modified, reducing the height of the stacks to 90 feet. All other aspects of the plant's design remain unchanged. As a result of the change in design, the simulation overstates the height of the stacks by about 28 percent. As this simulation indicates, with development of the project, the low, dense cluster of greenhouses the middleground will be removed, and in a portion of the area the greenhouses now occupy, the various elements of the LECEF will be visible. In the period immediately after construction, the plant will be clearly visible from SR 237. The most prominently visible elements will be the two-cell cooling tower, the water tank, HRSG shells, and stacks. The facility complex will be entirely backdropped by the East Bay hills, and the gray-taupe color of the plant's equipment will help to visually integrate it into the hill background. With the new stack design, the stacks will extend up to only about half the height of the hills in the background. The project will change the composition and character of the view to a degree in that the project's grouping of large, industrial-appearing features will be inserted into a landscape that now has a more open and less intensely developed appearance. However, the project's elements will not be out of scale with the transmission towers and other infrastructure elements now visible in the foreground of the view or with the high ridge that forms the backdrop. The addition of the Los Esteros Substation and connecting transmission towers will minimize the projects elements (see figure 5.1.1).

Figure 8.11-3c is a simulation that represents the view toward the project site as it would appear after construction of both the LECEF and the U.S. Dataport Project. In this simulation, as in the simulation of the project as it would appear immediately after construction, the generator stacks are shown as being 125 feet in height rather than 90 feet as the current design now specifies. Because the design of the Dataport will need to be modified to reflect the reconfiguration of the use of the space on the site, with a shift to taller and more densely spaced buildings, the details of the building designs are not known at this time. To represent the Dataport's structures, boxy buildings with little architectural detailing and which extend up to 75 feet in height were used to suggest the height and bulk of the likely U.S. Dataport buildings. In the area at the southern end of the WPCP buffer lands, this simulation portrays the landscape treatment that was proposed for this area as part of the approved U.S. Dataport plan. Once the U.S. Dataport Project is completed, the LECEF will become a smaller element set in the middle of a complex of much more massive and visually dominant structures. From the portion of SR 237 located to the east of KOP 1, views toward the project will be completely or nearly completely screened by the Dataport structures adjacent to the freeway. As the proposed landscaping begins to fill out, the LECEF will be effectively screened from KOP 1 and the nearby portions of the highway. With the 90 foot stack height, the stacks now visible in the simulation would appear to barely extend above the line of trees planted along the northern edge of the freeway.

8.11.2.3.2 Zanker Road and KOP 2

Figure 8.11-4b is the simulation of the project from KOP 2 as it would appear shortly after construction. In this simulation, and in Figure 8.11-4c (the view of the project as it would appear after construction of the U.S. Dataport Project) as is the case in the simulations of the views from KOP 1, the generator stacks are shown as being 125 feet in height rather than 90 feet that the current design now specifies. As a consequence the stacks seen in these views will actually be 28 percent less high than the stacks depicted. As this simulation indicates, with development of the project, the continuous line of low greenhouse structures now visible in the middleground will be removed, and in a portion of the area the greenhouses now occupy, the various elements of the LECEF will be visible. As a result of this change, the greenhouses' rectangular forms and the large areas of color contrast created by their roofs will be eliminated from the view, creating a somewhat higher level of visual intactness. The LECEF's cooling tower, service building, HRSG shells, water tank, and stacks will all be apparent in the view. However, their visual salience will be lessened by the fact that they are all seen against the hill backdrop and that their articulated forms and gray-taupe color will help them to be visually absorbed by the hills in the background. With the revised stack design, the stacks will be shorter and will not appear to extend to the top of the ridgeline. The project will change the composition and character of the view to a degree in that the project's grouping of large, industrial-appearing features will be inserted into a landscape that now has a somewhat more open appearance. Because, to a large degree, the removal of the greenhouses will balance out the addition of the facility structures, there will not be a sense of an intensified level of development in this view. Because of the facility's distance from Zanker Road, and because of the scale of the other elements in the view, the LECEF will not appear to be out of scale with its landscape setting as seen from this view and will not dominate this view.

Figure 8.11-4c is the simulation that represents the view from KOP 2 toward the project site as it would appear after construction of the LECEF and of the U.S. Dataport Project. As indicated in the discussion of Figure 8.11-3c above, the precise design of the Dataport Project's structures is not known at this time, so they were represented as building masses without much detailing that extend up to 75 feet in height. This simulation also portrays a row of trees that it is assumed would be likely to be planted along the Dataport's western perimeter, as well as landscaping in the area along the planned U.S. Dataport entrance road area at the southern end of the WPCP buffer lands. In views from Zanker Road, the Dataport structures will not screen the LECEF's features, but will create a constructed near-backdrop against which most of the project's elements will be seen. This near backdropping will create an even further reduction in the visual salience of the project's components. With the 90 foot stack height, the stacks would not appear to extend much above the heights of the Dataport structures lined up against the Dataport site's western boundary.

8.11.2.3.3 Water Vapor Plume

As indicated in Section 8.11.2.2.4, the frequency and size of water vapor plume emanating from the project's simple cycle stacks and inlet air cooling towers will be very limited. As a consequence, plumes associated with the LECEF will not be large enough and will not occur frequently enough to be considered to constitute a significant adverse impact in this setting.

8.11.2.3.4 Light and Glare

The LECEF's effects on visual conditions during hours of darkness will be very limited. As indicated previously, some night lighting will be required for operational safety and security. High illumination areas not occupied on a regular basis will be provided with switches or motion detectors to light these areas only when occupied. At times when lights are turned on, the lighting will not be highly visible offsite and will not produce offsite glare effects. The offsite visibility and potential glare of the lighting will be restricted by specification of non-glare fixtures, and placement of lights to direct illumination into only those areas where it is needed. The sound walls and landscape screening to be installed around the site will further reduce the visibility of facility's night lighting, particularly in views from areas located close by.

Because the stacks are not tall enough to require FAA safety lighting, there will be no blinking safety lights on the LECEF site.

8.11.3 Assessment of Significance of Overall Visual Impacts

As identified in the analysis below, the Project will not have effects on visual resources that will be significant under CEQA. This analysis has been structured by applying the criteria set forth in Appendix G of the State CEQA Guidelines. The CEQA Guidelines define a "significant effect" on the environment to mean a "substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the Project, including objects of historic or aesthetic significance (14 CCR, § 15382). The four questions related to aesthetics that are posed for lead agencies and the answers to them for the LECEF Project are:

1. Would the Project have a substantial adverse effect on a scenic vista?

   In the project viewshed, the only officially designated scenic corridors or vista areas that have potential relevance for the project consist of the trail corridors planned along the eastern edge of Coyote Creek and around the southern perimeter of the U.S. DataPort site and the southern and western perimeters of the WPCP buffer lands. Although City and County Plans and the Regional Bay Trail Plan designate corridors through this area for eventual development of trail corridors, these trails have not yet been built and are thus not now a part of the existing environment. In the proposal for the U.S. DataPort project that has been previously approved, placement of berms and extensive landscaping around the perimter of the U.S. DataPort property has been specified as a measure to mitigatge the effect of the DataPort on views from the trails. With development of the DataPort, views of the LECEF from any trail segments that might at some point in the future be built to the project's east and south will be nearly completely to completely screened by the DataPort's structures and by the berms and landscaping that will be installed along its periphery. In the planned trail corridor along the southern edge of the WPCP buffer lands, the extensive landscaping planned for the portion of the buffer lands in the vicinity of the DataPort access road is likely to substantially screen views toward the LECEF. In the portion of the trail corridor along Zanker Road, although the project will be visible, because of the distance involved (over a third of a mile), the visual integration of the project features into the hill backdrop, and the fact that the project will not dominate the view, the view from the trail corridor will not be adversely affected.

The Scenic Routes and Trails Diagram of the San Jose 2020 General Plan designates SR 237 as a "Landscaped Throughway". However, the plan's policy specifying that "Any development occurring ***adjacent*** (emphasis added) to Landscaped Throughways should incorporate interesting and attractive design qualities and promote a high standard of architectural excellence" does not apply to the project because the project site is not immediately adjacent to the freeway. The site is separated from the freeway by a 600 foot wide segment of the Lin-Hom property which has been approved for development as a part of the U.S. DataPort project. With the development of the data center's large buildings and perimeter landscaping views of the LECEF from the freeway will be effectively blocked.

2. Would the Project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

   This question does not apply to the LECEF because none of the project facilities fall within the boundaries of a state scenic highway.

3. Would the Project substantially degrade the existing visual character or quality of the site and its surroundings?

   As indicated in the analysis of the project's impacts on the views from KOPs 1 and 2, although the views would be altered to some degree, the extent of the view change would not be so great, and the nature of the change would not be such as to "substantially degrade" the existing view quality.

4. Would the Project create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?

   As indicated in Section 8.11.3.2, project light fixtures will be restricted to areas required for safety, security, and operations; lighting will be directed onsite; lighting will be shielded from public view; and non-glare fixtures and use of switches, sensors, and timers to minimize the time that lights not needed for safety and security are on will be specified. These measures should substantially reduce the offsite visibility of project lighting. Offsite visibility of lighting will be further reduced by the sound barrier wall and the landscaping along the project's southern, western, and northern boundaries.With these measures, lighting associated with the project will not pose a hazard or adversely affect day or nighttime views toward the site. As a consequence, the impacts of the project's visual effects related to lighting will be less than significant. In addition, at such time as the U.S. DataPort project is built on the lands surrounding the project on the north, east,and south, visibility of light from the LECEF project in the surrounding area will be further reduced.

Would the Project conflict with any applicable land use plan, policy, or regulation (including, but not limited to a general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an aesthetic effect?

As documented in the LORS analysis in Section 8.11.5, the Project will be in substantial conformance with the applicable implementing policies, ordinances, or other regulations specifically related to visual resources identified in the City of San Jose 2020 General Plan, the Alviso Master Plan, and the San Jose Zoning Ordinance provisions that pertain to this area.

8.11.4 Cumulative Impacts

The EIR evaluated cumulative impacts from the proposed U.S. Dataport project based on CEQA Guidelines (Section 15355), which define cumulative impacts as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts." Similarly, the AFC process requires a discussion of the compatibility of the proposed project with expected land uses and conformity with long-range land use plans and policies. The EIR identified a number of reasonably foreseeable development projects, which are identified and described in Table 8.4-7 in the Land Use section of this AFC.

Based on the analysis presented in the EIR, and on information from other recent environmental documents, development of the U.S. Dataport site in consideration with other pending and approved projects in the area would have cumulatively significant impacts on visual resources.

However, development of the LECEF is based on the evaluations presented in this section, and with the recent U.S. Dataport project approval, is consistent with expected land uses and visual changes (as evidenced by the development of PG&E's Los Esteros Substation and San Jose's recent RFQ and RFP seeking for development of additional power generation on its adjacent WPCP buffer lands) and conforms to the long-range plans and policies for the area. In terms of the cumulative significant impacts identified in the EIR, development of the project does not create an incremental impact to visual resources that would be significant beyond those impacts addressed in the EIR.

8.11.5 Laws, Ordinances, Regulations, and Standards

8.11.5.1 Introduction

This section describes the LORS relevant to the visual resource issues associated with the project (see Table 8.11-3). No federal, state, or regional laws, ordinances, regulations, or standards are known that would apply to the project's visual resource issues. However, visual resource and urban design concerns germane to the project are addressed in San Jose's General Plan, the Alviso Area Master Plan and Guidelines, and the City of San Jose Zoning Ordinance.

As described in Section 8.4.1.1.2 of the Land Use chapter, the San Jose Planning Commission certified the U.S. Dataport DEIR and FEIR as complete 0n March 14, 2001, and recommended approval of the project to the San Jose City Council. The City Council, acting as lead agency under CEQA, approved the U.S. Dataport project on April 3, 2001 and adopted an ordinance (No. 26343) to prezone and rezone the 174-acre U.S. Dataport site. At the same time, the City Council adopted a resolution (No. 70259) making required CEQA findings concerning the mitigation measures proposed in the EIR and adopting a statement of overriding considerations. As a result of these actions, the US Dataport site, including the property on which the LECEF is sited has been prezoned and zoned to Planned Development, A(PD).

Initially, 121 acres of the U.S. Dataport site was unincorporated territory that was under the jurisdiction of Santa Clara County. The San Jose City Council approved annexation of these 121 acres on June 19, 2001. Santa Clara County records annexations annexations as ministerial, although this has not yet occurred as of July 30, 2001. Therefore, all of the lands associated with the U.S. Dataport site and the LECEF site are subject to the City of San Jose's plans and zoning ordinance. Information about the City's zoning ordinance and relevant plans is summarized in Table 8.11-3.

TABLE 8.11-3
Applicable Laws, Ordinances, Regulations, and Standards

Document	Applicability	Place in AFC Where Conformance is Discussed	Agency/Contact
San Jose General Plan 2020 (1994)	Establishes the City's policies for land use, circulation, community facilities and environmental resource management. Includes specific policies for urban design and scenic routes.	Table 8.11-4.	San Jose Department of City Planning and Building Andrew Crabtree 801 North First Street, Room 400 San Jose, CA 95110 (408) 277-4576
Alviso Master Plan, City of San Jose, 1998	Establishes the location, intensity, and character of land uses; the circulation pattern; and necessary infrastructure improvements to support development. Includes land use objectives and policies for development within the Master Plan area.	Table 8.11-5	Same as above
San Jose Zoning Ordinance	Establishes classes of zoning districts governing the use of land and placement of buildings and improvements. Includes design review guidelines.	Discussion of San Jose Zoning Ordinance provided below	Same as above

8.11.5.2 San Jose General Plan

Table 8.11-4 describes the consistency with the San Jose General Plan relative to visual resource issues.

TABLE 8.11-4

Consistency with the San Jose General Plan

Element and Section/ Goal/Policy	Consistency
Community Development/Urban Design	
11. Non-Residential building height should not exceed 45 feet except: In the North Coyote Valley and South Edenvale Areas designated for Campus Industrial Use, the maximum building height is 90 feet. (p.57) For public or quasi-public uses on properties in any area of the community with a Public/Quasi-Public designation, the maximum Building height is 95 feet. (p. 57) For structures, other than buildings, where substantial height is intrinsic to the function of the structures and where such structures are located to avoid significant adverse effects on adjacent properties, height limits may be established in the context of project review. (p.58)	Height limits for the project will be established in the context of project review.
24. New development projects should include the preservation of ordinance-sized and other significant trees. Any adverse effect on the health and longevity of such trees should be avoided through appropriate design measures and construction practices. When tree preservation is not feasible, the project should include appropriate tree replacement. (p. 60)	It will not be feasible to retain all of the trees now growing on the project site. To mitigate their loss, the trees that are removed will be replaced using the planting scheme described in this section.
Aesthetic, Cultural, and Recreational Resources/Scenic Routes	
4. Any development occurring adjacent to Landscaped Throughways should incorporate interesting and attractive design qualities and promote a high standard of architectural excellence. (p. 90)	SR 237, which is classified as a Landscaped Throughway is the only city-designated scenic route in the near vicinity of the LECEF project site. This policy does not apply to the project in that the project is not adjacent to the highway, but is separated from it by a portion of the Lin-Hom property that will be used for the development of the U.S. Dataport project.

8.11.5.3 Alviso Master Plan

The Alviso Master Plan is a policy document, separate from the 2020 General Plan, that provides the background, vision and character to guide the future of the Alviso Planned Community. The Master Plan establishes the location, intensity, and character of land uses; the circulation pattern; and necessary infrastructure improvements to support development. Also, the Master Plan consists of the objectives, policies, design guidelines, and implementation measures to direct future development of residential, commercial, industrial, mixed, and open space uses in the plan area. The land uses outlined in the Master Plan have been incorporated into the San Jose 2020 General Plan in the form of the Alviso Planned Community. Policies related to visual resource and urban design issues are summarized in Table 8.11.5.

TABLE 8.11-5
Consistency with Provisions Related to Urban Design and Visual Resources in the Alviso Master Plan

Element and Section/ Goal/Policy	Consistency
Community Character The intent of the community character policies are to ensure that new development contributes in a positive way to Alviso's small town character by fostering and encouraging buildings of appropriate scale, materials, and design, and with uses that support community interaction. The design guidelines generally require buildings to be a maximum of 45 feet or 2 stories in height, but allow for higher buildings (up to 90 feet) to be clustered near SR 237 to avoid development adjacent to sensitive areas.	The proposed project is located near SR 237, approximately 1.8 miles away from the residential area of Alviso and other sensitive land uses. Except for the proposed height of the structures (up to 138 feet for the stacks), the project would not conflict with the development guidelines and standards outlines in the Alviso Master Plan to maintain the community character of Alviso.
Gateway Entrances The gateway entrances objective states that development located near SR 237 along both sides of Gold Street, First Street, and Zanker Road should foster a "gateway" feel through building orientation and other features.	Because of its setback from SR 237 and Zanker Road and because of the extensive landscaping that the U.S. Dataport project will be providing at the intersection of Zanker Road and SR 237, the project will not conflict with this policy.
Lands Outside the Village Area— The lands outside the village area design objective states that due to high visibility, development should be attractive, should fit in the context of the larger community; and should reflect some of the elements and materials of seaside styles to contribute to Alviso's sense of place.	The project, located in the southeast corner of the Alviso Master Plan area, away from the village area and Alviso Marina, does not include elements and materials typical of seaside styles. The project will eventually be largely hidden by the Dataport development, which will include berms and landscape screening to soften the modern appearance of the Internet data center buildings and the LECEF site.
Lands Outside the Village Area—Industrial Development Guidelines: The industrial development guidelines for lands outside of the village area seek to establish a positive relationship at the edge of the Alviso area between industrial and non-industrial uses. These guidelines identify development standards, such as height and setback requirements, building design, material, and architectural features requirements, and flood mitigation requirements.	The project proposes structures up to 90 feet which is greater than the 45 foot height requirement in the Master Plan. Building materials and architectural features are not proposed to reflect seaside styles. The project will eventually be largely hidden by the U.S. Dataport development, which will include berms and landscape screening to soften the modern appearance of the Internet data center buildings and the LECEF site. The project will be designed to conform with the remaining development standards, building design, parking and service areas and storage yards requirements outlines in the guidelines for industrial development.

TABLE 8.11-5
Consistency with Provisions Related to Urban Design and Visual Resources in the Alviso Master Plan

Element and Section/ Goal/Policy	Consistency
Landscaping –	
The intent of the landscaping policies is to preserve and promote Alviso's natural beauty and to help choose plant materials that are sensitive to local conditions. The specific policies which are relevant to the proposed project are listed below:	The landscaping planned as part of the LECEF is designed to provide screening of the facility's lower elements. Plant species compatible with Alviso's existing character will be specified. The landscaping will be irrigated with treated effluent from the adjacent Water Pollution Control facility.
Landscaping Policy 1 – Landscaping should make a strong connection between the natural and build environment and preserve Alviso's existing character.	
Landscaping Policy 3 – Landscaping should be used to screen unattractive uses and soften the effect of taller buildings due to the flood protection requirements.	
Landscaping Policy 4 – Landscaping should not block views of the rivers, natural riparian areas or marshlands.	
Landscaping Policy 7 – To the extend feasible, major new landscaping should be irrigated with reclaimed water from the Water Pollution Control Plant.	

8.11.5.4 San Jose Zoning Ordinance

As indicated in Section 8.11.5.1, in an action related to the approval of the U.S. Dataport project, the City of San Jose has prezoned and zoned the entire U.S. Dataport site, including the portion that will be occupied by the LECEF to Planned Development, A(PD). Because the A(PD) designation allows the development requirements to be tailored to meet specific area and development needs, construction of the LECEF on this site will thus be consistent with the City's zoning ordinance.

8.11.7 References

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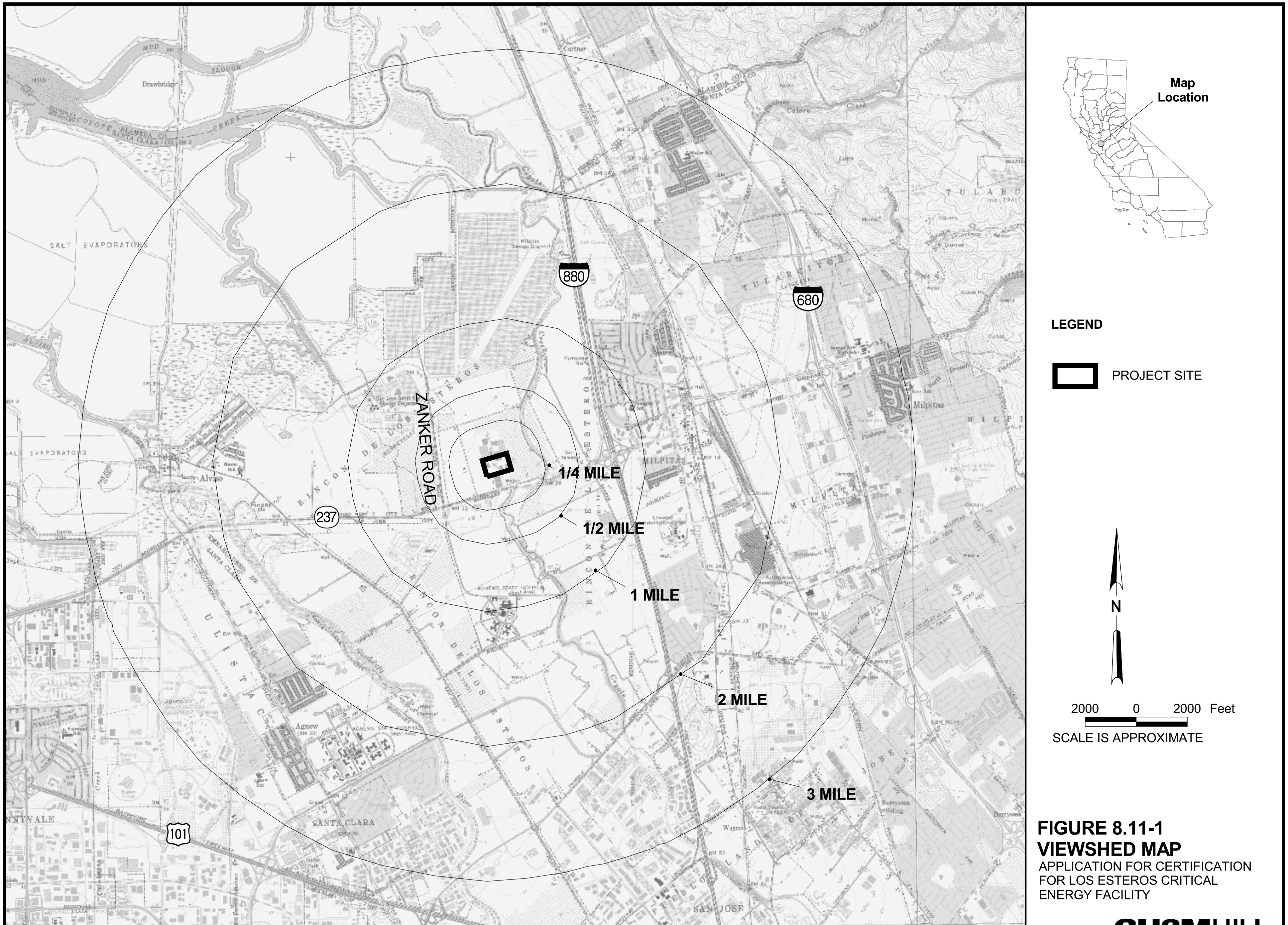

FIGURE 8.11-1
VIEWSHED MAP
APPLICATION FOR CERTIFICATION FOR LOS ESTEROS CRITICAL ENERGY FACILITY

CH2MHILL

CH2M Hill RDD ArcView Project File \\Thor\Cart1\rddgis\san_jose\sanjose.apr 9:52 p.m. 07-31-2001

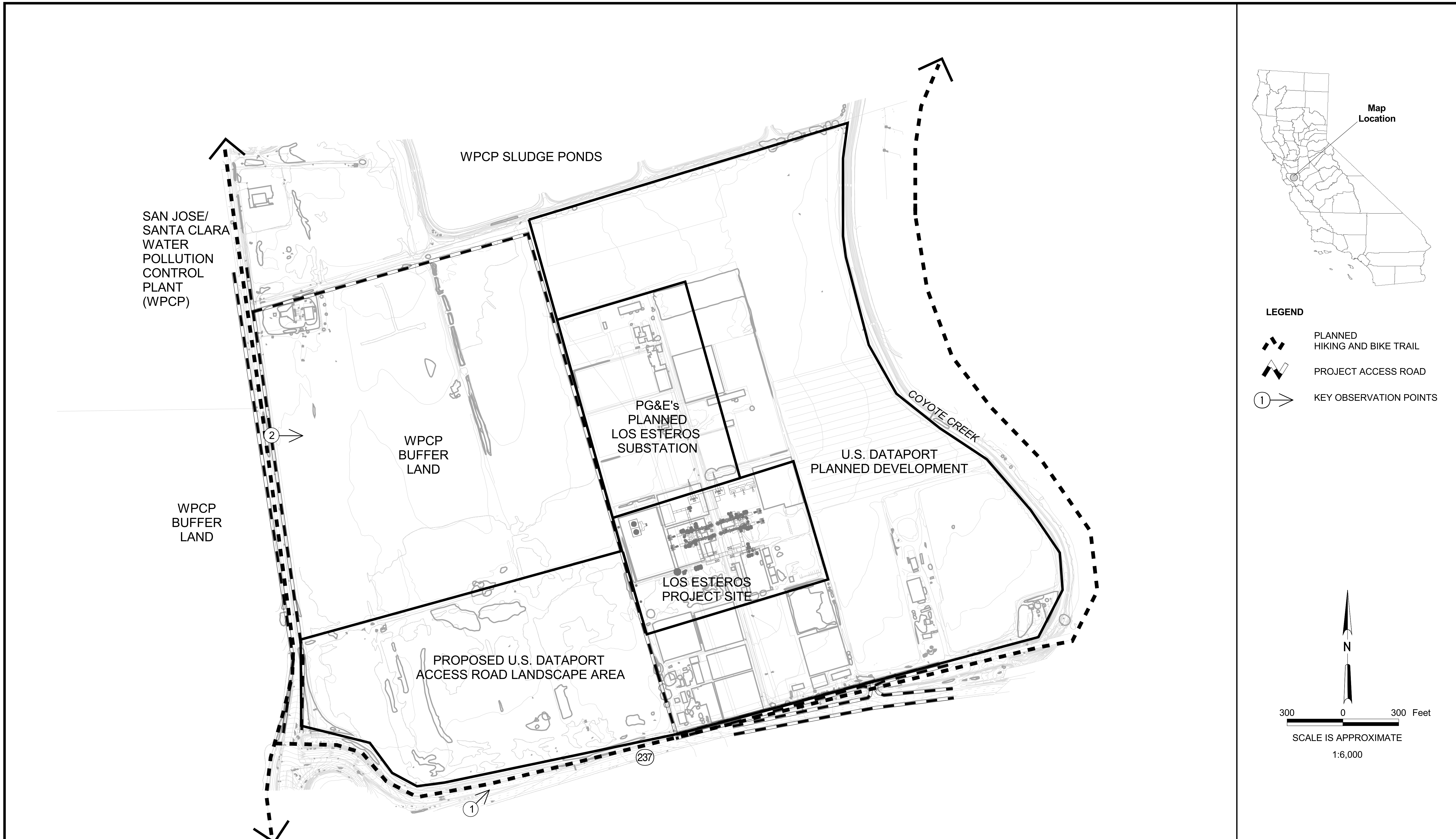

FIGURE 8.11-2
PROJECT SITE CONTEXT
APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

CH2MHILL

FIGURE 8.11-3A
EXISTING VIEW FROM KOP1
APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

D072001001RDD_90 (7/16/01)

CH2MHILL

FIGURE 8.11-3B
VISUAL SIMULATION OF ENERGY FACILITY FROM KOP1
APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

D072001001RDD_90 (7/16/01)

CH2MHILL

FIGURE 8.11-3C
VISUAL SIM OF ENERGY FACILITY AND U.S. DATAPORT PROJECT FROM KOP1
APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

D072001001RDD_90 (7/16/01)

CH2MHILL

FIGURE 8.11-4A
EXISTING VIEW FROM KOP2
APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY
CH2MHILL

D072001001RDD_91 (7/16/01)

FIGURE 8.11-4B
VISUAL SIMULATION OF ENERGY FACILITY FROM KOP2
APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

D072001001RDD_91 (7/16/01)

CH2MHILL

FIGURE 8.11-4C
VISUAL SIM OF ENERGY FACILITY AND U.S. DATAPORT PROJECT FROM KOP2
APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

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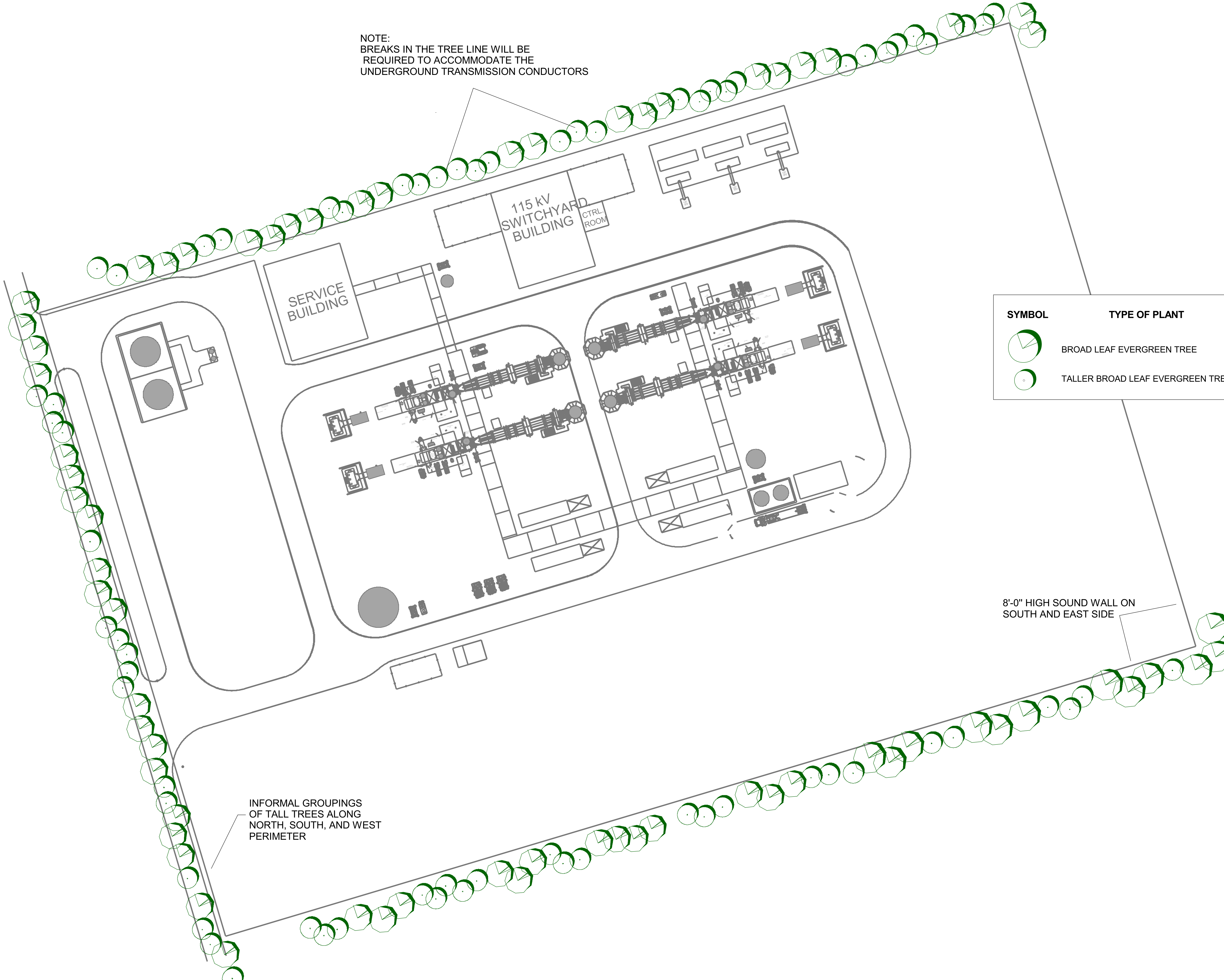

SYMBOL	TYPE OF PLANT	SUGGESTED SPECIES	SIZE	NUMBER SHOOTS
	BROAD LEAF EVERGREEN TREE	ACACIA DOCURRENS	15 GAL.	68
	TALLER BROAD LEAF EVERGREEN TREE	EUCALYPTUS CAMALDULENSIS	15 GAL.	66

N

100 0 100 Feet

SCALE IS APPROXIMATE

FIGURE 8.11-5
CONCEPTUAL LANDSCAPE PLAN

APPLICATION FOR CERTIFICATION
FOR LOS ESTEROS CRITICAL ENERGY
FACILITY

CH2MHILL

8.12 Hazardous Materials Handling

This section evaluates the potential effects on human health and the environment from the storage and use of hazardous materials in conjunction with the proposed AFC project. The data presented in this section has been taken, as appropriate, from the Environmental Impact Reports (DEIR and FEIR, referred to collectively as "EIR") for the U.S. Dataport Planned Development Rezoning and Prezoning Project (referred to as the proposed EIR project). The proposed EIR project combined the Central Reliability Energy Center (CREC) and a 2.227 million gross square foot data center. In the City of San Jose's resolution approving the U.S. Dataport project, the City Council suggested that the developer consider additional options to reduce the need for or replace diesel backup generators associated with the project as designed. This proposed AFC project is in response to that request and can be considered as a modification, under CEQA, to the U.S. Dataport project. The modification is referred to as the Los Esteros Critical Energy Facility (LECEF) project.

Section 8.12.1 describes the existing environment that may be affected, and Section 8.12.2 identifies potential impacts on that environment and on human health from site development as compared to the conditionally approved U.S. Dataport project. Section 8.12.3 discusses the offsite migration modeling protocol. Section 8.12.4 discusses fire and explosion risk. Section 8.12.5 investigates potential cumulative impacts, and Section 8.12.6 presents proposed mitigation measures. Section 8.12.7 presents the LORS applicable to hazardous materials, and Section 8.12.8 describes the agencies involved and provides agency contacts. Section 8.12.9 describes permits required and the permit schedule. Section 8.12.10 provides the references used to develop this section.

8.12.1 Affected Environment

The LECEF site is located north of SR 237, east of Zanker Road, and west of Coyote Creek (see Figure 1.1-1). Land use in the surrounding area (discussed in detail in Section 8.4) includes agriculture, commercial, residential, industrial, public facilities, and major highway. There are no sensitive receptors in close proximity to the project site (City of San Jose, 2000).

Two schools, Anthony Spangler Elementary School and Curtner Elementary School are located in Milpitas, approximately one mile and 1.3 miles to the northeast, respectively. George Mayne Elementary School and Alviso Park are located approximately 1.4 miles to the west.

The Agnews Developmental Center (East Area) is located approximately 1.1 miles south of the site. The Agnews Development Center, which also has an associated gas-fired cogeneration facility, operated by the California Department of Development Services, provides care and treatment of persons with developmental disabilities. A childcare center recently opened at the Cisco Systems facility on Barber Lane in Milpitas, south of SR 237 and west of I-880, located approximately 1.1 mile southeast of the project site.

The nearest residential areas are located approximately 0.6 mile southwest, 0.8 mile east, and 1.4 miles southeast of the center of the project site.

Due to the safety inherently designed into LECEF, particularly the ammonia system required for pollution control, the area potentially affected by any release of hazardous materials would not extend more than 0.1 miles from LECEF. Because there are no schools hospitals, day-care facilities, emergency response facilities or long-term health care facilities located within this area potentially affected by any release of hazardous materials, the figure required by CEC Siting Regulations, Title 20, Division 2, Chapter 5, Appendix B (g) (10) (B) would be equivalent to Figure 1.1-2, which shows the project site and surrounding area on a map at a scale 1:24,000.

Sensitive receptors within a 3-mile radius of the project site are shown on Figures 8.6-1a and 8.6-1b, and descriptions of the receptors are presented in Appendix 8.6.

8.12.2 Potential Environmental and Human Health Effects

Hazardous materials to be used at LECEF during construction and operation were evaluated for hazardous characteristics. That evaluation is discussed in this section. Some of these materials will be stored at the generating site continuously. Others will be brought onsite for the initial startup and periodic maintenance (every 3 to 5 years). Some materials will be used only during startup. Hazardous materials will not be stored or used in the gas supply line, recycled water supply line, waste water discharge line, storm water discharge line, or electric transmission line corridors during operations. Storage locations are described in Table 8.12-1. Table 8.12-2 presents information about these materials, including trade names; chemical names; Chemical Abstract Service (CAS) numbers; maximum quantities onsite; reportable quantities (RQs); La Follette Bill threshold planning quantities (TPQs); and status as a Proposition 65 chemical (a chemical known to be carcinogenic or cause reproductive problems in humans). Figure 8.12-2 illustrates storage locations for the hazardous materials that will be used at LECEF. Toxicity characteristics and the exposure level criteria for acutely hazardous chemicals are shown in Table 8.12-3. Health hazards and flammability data are summarized in Table 8.12-4. Table 8.12-4 also contains information on incompatible chemicals (e.g., sodium hypochlorite and ammonia). Measures to mitigate the potential effects from the hazardous materials are presented in Section 8.12.6.

8.12.2.1 Pre-Construction Phase

Site clearing activities may require the handling of hazardous materials. As discussed in Section 8.13, a Phase I Environmental Site Assessment (ESA), performed on the c*Power property (formerly known as the Lin-Hom property) in May of 2000, concluded that:

- Soil sampling should be performed to evaluate contamination levels associated with pesticide use.
- Gasoline underground storage tank (UST) and two diesel USTs should be removed along with 10,000 gallon UST resting on the ground surface.
- An asbestos survey must be conducted under National Emissions Standards for Hazardous Air Pollutants (NESHAP) Guidelines.
- On-site structures should be evaluated for the presence of lead-based paint.

A Preliminary Phase II ESA [see Section 8.13] has detected levels of soil contamination that are below threshold levels used to determine if further evaluation is warranted, to prioritize areas of concern, to initiate negotiations in determining clean-up levels, and to estimate potential health risks.

8.12.2.2 Construction Phase

During construction of the project and linears, acutely hazardous materials, as defined in California's Health and Safety Code, Section 25531, will not be used. Therefore, no discussion of acutely hazardous materials storage or handling is included in this section.

Hazardous materials to be used during construction of the project and its associated linear facilities will be limited to gasoline, diesel fuel, motor oil, hydraulic fluid, solvents, cleaners, sealants, welding flux, various lubricants, paint, and paint thinner. There are no feasible alternatives to motor fuels and oils for operating construction equipment. The types of paint required are dictated by the types of equipment and structures that must be coated and by the manufacturers' requirements for coating.

The quantities of hazardous materials that will be onsite during construction are small, relative to the quantities used during operation. Construction personnel will be trained to handle the materials properly. The most likely possible incidents will involve the potential for fuels, oil, and grease dripping from construction equipment. The small quantities of fuel, oil, and grease that might drip from construction equipment will have relatively low toxicity and will be biodegradable. Therefore, the expected environmental impact is minimal.

Equipment refueling will be performed away from water bodies to prevent contamination of water in the event of a fuel spill. If there is a large spill from a service or refueling truck, contaminated soil will be placed into barrels or trucks by service personnel for offsite disposal as a hazardous waste at a permitted hazardous waste transfer, storage, and disposal (TSD) facility. If a spill involves hazardous materials equal to or greater than the specific reportable quantity (25 gallons for petroleum products), all federal, state, and local reporting requirements will be followed. In the event of a fire or injury, the local fire department will be called (City of San Jose Station No. 29). Handling procedures for the hazardous materials to be used onsite during construction are presented in Section 8.12.6.1.

In conclusion, due to the small quantities of hazardous materials handled at the site and along the gas supply and electric transmission lines during construction, the potential for environmental effects from the use of these is small.

8.12.2.3 Operations Phase

Several hazardous materials, including an acutely hazardous materials (19 percent aqueous ammonia[1]), will be stored at the generating site during LECEF operation. Some of these materials, described in Table 8.12-1 and shown on Figure 8.12-2, will be stored at the generating site continuously. Others will be brought onsite, used, and then not used onsite again for several years, while still others will be onsite at startup, used, and then never used again. Hazardous materials will not be stored or used in the gas supply line, water lines, or electric transmission line corridors during operations.

[1] The Office of Emergency Services (OES) stated on June 11, 2001, that they will initiate formal rulemaking for the California Accidental Release Prevention (CalARP) Program Phase 2 regulations, pursuant to HSC, Chapter 6.95, Article 2. The Phase 2 regulatory process includes changes to the listing and thresholds for CalARP Program toxic regulated substances in Table 3, Section 2770.5, including establishing a minimum compliance concentration for aqueous ammonia at 20 percent and setting the threshold at 1,000 pounds.

TABLE 8.12-1
Location of Hazardous Materials

Chemical	Use	Storage Location	State	Type of Storage
Aluminum Sulfate, Sodium Aluminate, or Polyaluminum Chloride	Coagulant for plant makeup water	Water treatment skid	Liquid	Continuously Onsite
Aqueous Ammonia (19% NH3)	Control oxides of nitrogen (NOx) emissions through selective catalytic reduction	East of southeast chiller skid	Liquid	Continuously Onsite
Calcium Oxide or Calcium Hydroxide	Clarifier/softener chemical	Near water treatment skid	Solid	Continuously Onsite
Cleaning chemicals/detergents	Periodic cleaning	Water treatment skid /service building	Liquid	Continuously Onsite
Coagulant Aid Polymer (e.g., NALCO NALCOLYTE 8799)	Coagulant for plant makeup water	Water treatment skid	Liquid	Continuously Onsite
Ferric Chloride or Ferric Sulfate	Coagulant for plant makeup water	Water treatment skid	Liquid	Continuously Onsite
Filter Aid Polymer (e.g. NALCO NALCLEAR 7763)	Used for multi-media filter maintenance	Water treatment skid	Liquid	Continuously Onsite
Laboratory reagents	Water/wastewater laboratory analysis	Water treatment skid	Liquid and Granular Solid	Continuously Onsite
Lubricating Oil	Lubricate rotating equipment (e.g., gas turbine and steam turbine bearings)	Contained within equipment	Liquid	Continuously Onsite
Magnesium Oxide or Magnesium Hydroxide	Process water pre-treatment (silica removal)	Water treatment skid	Liquid	Continuously Onsite
Mineral Insulating Oil	Transformers/switchyard	Contained within transformers and switches	Liquid	Continuously Onsite
Non-Oxidizing Biocide (e.g. NALCO 7330)	Cooling tower biological control	Near cooling tower	Liquid	Continuously Onsite
Phosphonate (e.g. NALCO 7385)	Antiscalant for use in reverse osmosis unit	Water treatment skid	Liquid	Continuously Onsite

TABLE 8.12-1
Location of Hazardous Materials

Chemical	Use	Storage Location	State	Type of Storage
Scale Inhibitor (Polyacrylate)	Cooling tower scale inhibitor	Near cooling tower	Liquid	Continuously Onsite
Sodium Bromide	Cooling tower biocide and process water pretreatment	Near cooling tower and water treatment skid	Liquid	Continuously Onsite
Sodium Hydroxide (NaOH)	Demineralizer resin regeneration (if onsite regeneration used), pH neutralization, and reactor clarifier/softener chemical	Water treatment skid	Liquid	Continuously Onsite
Sodium Hypochlorite (NaOHCl)	Biocide for circulating water system and process water pretreatment	Near cooling tower and water treatment skid	Liquid	Continuously Onsite
Stabilized Bromine (e.g. NALCO STABREX ST70)	Biocide for circulating water system and process water pretreatment	Near cooling tower and water treatment skid	Liquid	Continuously Onsite
Sulfuric Acid (H2SO4)	Circulating water pH control, demineralizer resin regeneration (if onsite regeneration used), pH neutralization	Near cooling tower and water treatment skid	Liquid	Continuously Onsite

TABLE 8.12-2
Chemical Inventory

Trade Name	Chemical Name	CAS Number	Maximum Quantity Onsite	CERCLA SARA RQ[a]	RQ of Material as Used Onsite[b]	LaFollette Bill TPQ[c]	Prop 65
Acutely Hazardous Materials							
Aqueous Ammonia (19% solution)	Ammonium Hydroxide	1336-21-6 (for NH_3 -H_2O)	10,000-gal.	100 lb.	500 lb.	500 lb.	No
Hazardous Materials							
Aluminum Sulfate[g]	Aluminum Sulfate	10043-01-3	800 gal.	5,000 lb.	5,000 lb.	d	No
Anti-Foam (e.g. NALCO 71 D5 ANTIFOAM)	Hydrotreated light distillate (10-20%)	6742-47-8	800 gal.	d	d	d	No
	n-Decanol (1-5%)	112-30-1		d	d	d	No
	n-Octanol (5-10%)	118-87-5		d	d	d	No
Calcium Chloride	Calcium Chloride	10043-52-4	4,000 lbs.	d	d	d	No
Calcium Hydroxide[g]	Calcium Hydroxide	1305-62-0	50 tons	d	d	d	No
Calcium Oxide[g]	Calcium Oxide	1305-78-8	50 tons	d	d	d	No
Calcium Sulfate	Calcium Sulfate	10101-41-4	4,000 lbs.	d	d	d	No
Chelating Agents	EDTA	60-00-4	55 gal.	5,000 lb.	5,000 lb.	d	No
Cleaning Chemicals/Detergents	Various	None	20 gal.	d	d	d	No
Coagulant Aid Polymer (e.g. NALCO NALCOLYTE 8799)	Sodium Chloride	7647-14-5	800 gal.	d	d	d	No
	Polyquaternary Amine	20507700000-5062P		d	d	d	
Ferric Chloride[g]	Ferric Chloride	7705-08-0	3,000	1,000 lb.	1,000 lb.	d	No
Ferric Sulfate[g]	Ferric Sulfate	10028-22-5	3,000	1,000 lb.	1,000 lb.	d	No
Filter Aid Polymer (e.g. NALCO NALCLEAR 7763)	Hydrotreated light distillate	64742-47-8	800 gal.	d	d	d	No
	Ethoxylated C10-16 Alcohols	68002-97-1		d	d	d	No
	Acrylic Polymer	20507700000-5027P		d	d	d	No
Laboratory Reagents (liquid)	Various	None	20 gal.	d	d	d	No

TABLE 8.12-2
Chemical Inventory

Trade Name	Chemical Name	CAS Number	Maximum Quantity Onsite	CERCLA SARA RQ[a]	RQ of Material as Used Onsite[b]	LaFollette Bill TPQ[c]	Prop 65
Laboratory Reagents (solid)	Various	None	100 lb.	[d]	[d]	[d]	No
Lubrication Oil	Oil	None	6,500 gal.	42 gal.[e]	[f]	[d]	Yes
Magnesium Hydroxide[g]	Magnesium Hydroxide	1309-42-8	800 gal.	[d]	[d]	[d]	No
Magnesium Oxide[g]	Magnesium Oxide	1309-48-4	800 gal.	[d]	[d]	[d]	No
Mineral Insulating Oil	Oil	8012-95-1	5,000 gal.	42 gal.[e]	[f]	[d]	Yes
Non-Oxidizing Biocide (e.g. NALCO 7330)	5-Chloro-2-Methyl-4-Isothiazolin-3-one (1.1%)	26172-55-4	800 gal.	[d]	[d]	[d]	No
	2-Methyl-4-Isothiazolin-3-one (0.3%)	2682-20-4		[d]	[d]	[d]	No
Oxygen Scavenger (e.g. NALCO ELIMIN-OX)	Carbohydrazide	497-18-7	800 gal.	[d]	[d]	[d]	No
Phosphonate (e.g. NALCO 7385)	2-Phosphono-1,2,4-Butanetricarboxylic acid (45-50%)	37971-36-1	800 gal.	[d]	[d]	[d]	No
Polyaluminum Chloride[g]	Polyaluminum Chloride	None	800 gal.	[d]	[d]	[d]	No
Scale Inhibitors (various)	Polyacrylate	Various	800 gal.	[d]	[d]	[d]	No
Sodium Aluminate[g]	Sodium Aluminate	1302-42-7	800 gal.	[d]	[d]	[d]	No
Sodium Bisulfite (e.g. NALCO 7408)	Sodium Bisulfite (40 to 70%)	7631-90-5	800 gal.	5,000 lb.	7,143 lb.	[d]	No
Sodium Bromide	Sodium Bromide	7647-15-6	2,000 gal.	[d]	[d]	[d]	No
Sodium Hydroxide	Sodium Hydroxide (50%)	1310-73-2	800 gal.	1,000 lb.	2,000 lb.	[d]	No
Sodium Hypochlorite (Bleach)	Sodium Hypochlorite (10%)	7681-52-9	8,000 gal.	100 lb.	1,000 lb.	[d]	No
Sodium Sulfate	Sodium Sulfate	7757-82-6	4,000 lb.	[d]	[d]	[d]	No
Sodium Sulfite[g]	Sodium Sulfite	7757-83-7	800 gal.	[d]	[d]	[d]	No

TABLE 8.12-2
Chemical Inventory

Trade Name	Chemical Name	CAS Number	Maximum Quantity Onsite	CERCLA SARA RQ[a]	RQ of Material as Used Onsite[b]	LaFollette Bill TPQ[c]	Prop 65
Stabilized Bromine (NALCO STABREX ST70)	Sodium Hydroxide (1 to 5%)	1310-73-2	2,000 gal.	1,000 lb.	20,000 lb.	[d]	No No
Sulfuric Acid	Sulfuric Acid (93%)	7664-93-0	6,000 gal.	1,000 lb.	1,075 lb.	[d]	No

[a]Reportable quantity for a pure chemical, per the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) [Ref. 40 CFR 302, Table 302.4]. Release equal to or greater than RQ must be reported. Under California law, any amount that has a realistic potential to adversely affect the environment or human health or safety must be reported.

[b] Reportable quantity for materials as used onsite. Since some of the hazardous materials are mixtures that contain only a percentage of a reportable chemical, the reportable quantity of the mixture can be different than for a pure chemical. For example, if a material only contains 10 percent of a reportable chemical and the RQ is 100 lbs., the reportable quantity for that material would be (100 lbs.)/(10%) = 1,000 lbs.

[c] Threshold Planning Quantity [Ref. 40 CFR Part 355, Appendix A]. If quantities of extremely hazardous materials equal to or greater than TPQ are handled or stored, they must be registered with the local Administering Agency.

[d] No reporting requirement. Chemical has no listed RQ or TPQ.

[e] State reportable quantity for oil spills that will reach California state waters [Ref. CA Water Code Section 13272(f)]

[f] Per the California Water Quality Control Board Region 2, they would like all oil spills to surface water reported, even for less than the state reportable quantity of 42 gal**.**

[g] Some of the chemicals have alternatives (See table 8.12-1), thus the maximum quantity stored onsite can be zero if an alternative chemical is being used.

Table 8.12-2 presents information about these materials, including trade names; chemical names; Chemical Abstract Service (CAS) numbers; maximum quantities onsite; reportable quantities (RQs); La Follette Bill threshold planning quantities (TPQs); and status as a Proposition 65 chemical (a chemical known to be carcinogenic or cause reproductive problems in humans). Toxicity characteristics and the exposure level criteria for acutely hazardous chemicals are shown in Table 8.12-3. Health hazards and flammability data are summarized in Table 8.12-4. Table 8.12-4 also contains information on incompatible chemicals (e.g., sodium hypochlorite and ammonia).

TABLE 8.12-3
Acutely Hazardous Materials

Name	Toxic Effects	Exposure Levels-Pure NH3
Aqueous Ammonia (19% solution)	Toxic effects for contact with pure liquid or vapor causes eye, nose, and throat irritation, skin burns, and vesiculation. Ingestion or inhalation causes burning pain in mouth, throat, stomach, and thorax, constriction of thorax, and coughing followed by vomiting blood, breathing difficulties, convulsions, and shock. Other symptoms include dyspnea, bronchospasms, pulmonary edema, and pink frothy sputum. Contact or inhalation overexposure can cause burns of the skin and mucous membranes, and headache, salivation, nausea, and vomiting. Other symptoms include labored breathing, bloody mucous discharge, bronchitis, laryngitis, hemmoptysis, and pneumonitis. Damage to eyes may be permanent, including ulceration of conjunctiva and cornea and corneal and lenticular opacities.	Occupational Exposures PEL = 35 mg/m3 OSHA TLV = 18 mg/m3 ACGIH TWA = 25 mg/m3 NIOSH STEL = 35 mg/m3 Hazardous Concentrations IDLH = 500 ppm LD50 = 350 mg/kg - oral, rat ingestion of 3 to 4 ml may be fatal Sensitive Receptors ERPG-1 = 25 ppm ERPG-2 = 200 ppm ERPG-3 = 1,000 ppm

ACGIH	American Conference of Government Industrial Hygienists
ERPG	Emergency Response Planning Guideline
ERPG-1	Maximum airborne concentration below which nearly all individuals could be exposed for up to 1 hour without experiencing other than mild transient adverse health effects
ERPG-2	Maximum airborne concentration below which nearly all individuals could be exposed for up to 1 hour without developing irreversible or serious health effects
ERPG-3	Maximum airborne concentration below which nearly all individuals could be exposed for up to 1 hour without experiencing life-threatening health effects
IDLH	Immediately dangerous to life and health
LD_{50}	Dose lethal to 50 percent of those tested
LDLO	Lowest published lethal dose
mg/kg	Milligrams per kilogram
mg/m^3	Milligrams per cubic meter
NIOSH	National Institute of Occupational Safety and Health
PEL	OSHA permissible exposure limit for 8-hr workday
ppm	parts per million
STEL	Short-term exposure limit, 15-min. exposure
TCLO	Lowest published toxic concentration
TLV	ACGIH threshold limit value for 8-hr workday
TWA	NIOSH time-weighted average for 8-hr workday

Potential environmental and/or human health effects could potentially be caused by accidental releases, accidental mixing of incompatible chemicals, fires, and injury to facility personnel from contact with a hazardous material. Accidental releasing the 19 percentaqueous ammonia, might present the most potential for effects on the environment and/or human health.

Pure ammonia (NH_3) is a volatile, acutely hazardous chemical that is stored under pressure as a liquid and becomes a toxic gas if released. Ammonia gas is very soluble in water.

Aqueous ammonia consists of a solution of ammonia and water. The aqueous ammonia concentration proposed for use at the facility is 19 percent ammonia and 81 percent water. If the aqueous ammonia solution leaks or is spilled, the ammonia in solution will gradually escape or evaporate as a gas into the atmosphere. The odor threshold of ammonia is about 5 ppm, and minor irritation of the nose and throat will occur at 30 to 50 ppm. Concentrations greater than 140 ppm will cause detectable effects on lung function even for short-term exposures (0.5 to 2 hours).

At higher concentrations of 700 to 1,700 ppm, ammonia gas will cause severe effects; death occurs at concentrations of 2,500 to 7,000 ppm. The hazard to facility workers will be mitigated by facility safety equipment, hazardous materials training, and emergency response planning (see Section 8.7, Worker Health and Safety). In a catastrophic accident, toxic ammonia gas could migrate offsite (see Section 8.12.3). Facility design will minimize the potential for harm to humans located offsite (see Section 8.12.6.2.1).

Sulfuric acid, a hazardous material, is a very corrosive chemical that can cause severe harm to humans if ingested, inhaled, or contacted. However, sulfuric acid has a very low vapor pressure and will not readily volatilize upon release. The potential for harm to humans offsite is, therefore, minimal. The hazard to facility workers will be mitigated by facility safety equipment, hazardous materials training, and emergency response planning (see Sections 8.7 and 8.12.8.4). An RMP, as required under federal regulations (40 Code of Federal Regulations [CFR] 68) and the California Health and Safety Code (Sections 25531 to 25543.3), will be developed to describe these mitigation measures and other requirements (see Section 8.12.8.4). An RMP is required for substances described in Section 112(r)(5) of the Clean Air Act (CAA) and listed in Appendix A of Part 355 of Subchapter J of Chapter I of Title 40 of the CFR that are handled or stored in quantities above certain levels.

The remaining materials in Table 8.12-2 are also hazardous materials, but they pose less threat to humans than the aqueous ammonia and sulfuric acid. However, most of the hazardous materials are corrosive and are a threat to humans, particularly workers at the site, if inhaled, ingested, or contacted by skin. The hazardous materials and their toxic and other characteristics are summarized in Table 8.12-4.

TABLE 8.12-4
Toxicity of Hazardous and Acutely Hazardous Materials

Hazardous Materials	Physical Description	Health Hazard	Reactive & Incompatibles	Flammability [a]
Aqueous Ammonia	Colorless gas with pungent odor.	Corrosive: Irritation to permanent damage from inhalation, ingestion, and skin contact.	Acids, halogens (e.g. chlorine), strong oxidizers, salts of silver and zinc.	Combustible, but difficult to burn.
Aluminum Sulfate	Liquid.	Toxic: Moderately toxic by ingestion.	None.	Non-flammable.
Anti-Foam (e.g. NALCO 71 D5 Antifoam)	Clear, light yellow	Causes irritation to skin and eyes	Strong oxidizers (e.g. chlorine, peroxides, chromates, nitric acid, perchlorates, concentrated oxygen, permaganates)	Combustible
Calcium Chloride	Odorless small white flakes	Dust/mist may cause irritation to upper respiratory tract.	Will absorb water when exposed to atmosphere – release ammonia vapors Metals slowly corrode in aqueous solution	Non-flammable
Calcium Hydroxide	White powder	Corrosive: Causes burn. Skin, eye, and respiratory irritant.	Strong acids (hydrochloric, nitric, and sulfuric acids)	Non-flammable
Calcium Oxide	White to gray solid	Harmful is swallowed. Skin, eye, and respiratory irritant. Causes burns.	Water, fluorine, strong acids	Non-combustible
Calcium Sulfate	White granules; odorless	May cause impaired sense of smell and taste, respiratory tract irritation, dermatitis and conjunctivitis	Diazomethane (vapor) and Phosphorous (red)	Non-flammable
Chelating Agent (EDTA)	White powder, odorless	Dust may be irritating to eyes and mucous membranes	None specified	Non-flammable
Cleaning Chemicals/Detergents	Liquid.	Refer to individual chemical labels.	Refer to individual chemical labels.	Refer to individual chemical labels.
Coagulant Aid Polymer (e.g. NALCO NALCOLYTE 8799)	Light yellow liquid	May cause irritation to skin and eyes with prolonged contact.	Strong oxidizers	Non-flammable

TABLE 8.12-4
Toxicity of Hazardous and Acutely Hazardous Materials

Hazardous Materials	Physical Description	Health Hazard	Reactive & Incompatibles	Flammability [a]
Oxygen Scavenger (e.g. NALCO ELIMIN-OX)	Colorless liquid.	Toxic: Slightly toxic, low human hazard.	Mineral acids, nitrites, and strong oxidizers.	Non-flammable.
Ferric Chloride	Clear, yellow-orange liquid	Corrosive: Causes burns to eyes and skin. Ingestion may cause stomach pain, nausea, vomiting, shock, and diarrhea.	Heat and evaporation	Non-flammable
Ferric Sulfate	Dark reddish-brown solution with mild odor	Corrosive: May cause irritation to mucous membranes, respiratory tract and lung tissue if inhaled or burns to skin and eyes. Ingestion can cause stomach irritation, digestive tract burns, liver cirrhosis and fibrosis of pancreas.	Cast iron/bronze, brass, 304ss, hastelloy B, copper and alloys, galvanized steel, aluminum, paints, enamels, and concrete.	Non-flammable
Filter Aid Polymer (e.g. NALCO NALCLEAR 7763)	Off-white/opaque liquid	May cause irritation to skin and eyes with prolonged contact.	Water and strong oxidizers	Non-flammable
Laboratory Reagents	Liquid and solid.	Refer to individual chemical labels.	Refer to individual chemical labels.	Refer to individual chemical labels.
Lubrication Oil	Oily, dark liquid.	Hazardous if ingested.	Sodium hypochlorite.	Flammable.
Magnesium Hydroxide	Odorless white powder	None identified. Avoid contact with eyes, skin, and clothing.	None documented	Non-flammable
Magnesium Oxide	White to light-gray powder	Causes irritation to eyes, skin, and respiratory tract.	Air, bromine trifluoride and trichloride, phophorous pentachloride, oxidizers	May ignite and explode when heated with sublimed sulfur, magnesium powder, or aluminum powder.

TABLE 8.12-4
Toxicity of Hazardous and Acutely Hazardous Materials

Hazardous Materials	Physical Description	Health Hazard	Reactive & Incompatibles	Flammability [a]
Mineral Insulating Oil	Oily, clear liquid.	Minor health hazard.	Sodium hypochlorite.	Can be combustible, depending on manufacturer.
Non-Oxidizing Biocide (e.g. NALCO 7330)				
Phosphonate (e.g. NALCO 7385)	Colorless liquid	May cause skin or eye irritation with prolonged contact	Strong alkalies (e.g. ammonia and its solutions, carbonates, sodium hydroxide (caustic), potassium hydroxide, calcium hydroxide (lime), cyanide, sulfide, hypochlorites, chlorites), and metals.	Non-flammable
Polyaluminum Chloride	Clear to pale yellow odorless liquid	Causes irritation to skin, eyes, and respiratory tract	Metals, alkalis (e.g. ammonia and its solutions, carbonated, sodium hydroxide, potassium hydroxide, chlorites)	Non-flammable
Scale Inhibitors (various)	Yellow green liquid.	Corrosive and Toxic: Slight to moderate toxicity. Irritation to skin and eyes.	Strong acids.	Non-flammable.
Sodium Aluminate	Straw colored liquid	Strong irritant to tissue	Acids and strong oxidizing agents	Non-flammable
Sodium Bisulfite	Yellow liquid	Corrosive: Irritation to eyes, skin, and lungs. May be harmful if digested	Strong acids and strong oxidizing agents	Non-flammable
Sodium Bromide	White crystals, granules, or powder; odorless	Causes irritation to skin, eyes, and respiratory tract. Can cause damage to central nervous system if ingested.	Acids, alkaloidal and heavy metal salts, oxidizers, and bromine trifluoride	Non-flammable
Sodium Hydroxide	Clear yellow liquid.	Corrosive: Irritant to tissue in presence of moisture. Strong irritant to tissue by ingestion.	Water, acids, organic halogens, some metals.	Non-flammable.

TABLE 8.12-4
Toxicity of Hazardous and Acutely Hazardous Materials

Hazardous Materials	Physical Description	Health Hazard	Reactive & Incompatibles	Flammability [a]
Sodium Hypochlorite (Bleach)	Pale green; sweet, disagreeable odor. Usually in solution with H2O or sodium hydroxide.	Corrosive and Toxic: Toxic by ingestion. Strong irritant to tissue.	Ammonia and organic materials.	Fire risk when in contact with organic materials.
Sodium Sulfate	White granular solid with no odor	Toxic: Causes irritation of skin, eyes, and respiratory tract. May be harmful if swallowed. Potential carcinogen.	Aluminum powder and molten sodium sulfate	Non-flammable
Sodium Sulfite	White crystals or powder with no odor	May cause irritation of skin, eyes, and mucous membranes. Ingestion may cause gastrointestinal irritation.	Strong oxidizing agents and strong acids	Non-flammable
Stabilized Bromine (NALCO STABREX ST70)	Clear, light yellow liquid.	Corrosive: Irritant to eyes and skin. Harmful if ingested or inhaled.	Strong acids. Organic materials. Sodium hypochlorite.	Non-flammable.
Sulfuric Acid	Colorless, dense, oily liquid.	Strongly Corrosive: Strong irritant to all tissue. Minor burns to permanent damage to tissue.	Organic materials, chlorates, carbides, fulminates, metals in powdered form. Reacts violently with water.	Non-flammable.

Data was obtained from Material Safety Data Sheets (MSDSs) and "*Hazardous Chemical Desk Reference*, 2nd Edition", by Richard J. Lewis, Sr. 1991.
[a] Per Department of Transportation regulations, under 49 CFR 173: "Flammable" liquids have a flash point less than or equal to 141 F; "Combustible" liquids have a flash point greater than 141 F.

8.12.3 Offsite Migration Modeling

Because there is some human activity in the vicinity of the proposed site, a vulnerability analysis was performed. The analysis assesses the risk to humans from the site if a spill or rupture of the aqueous ammonia storage tank were to occur. The analysis was performed using the conservative RMP*Comp, which was developed by the CAMEO Team at the Hazardous Materials Response and Assessment Division (an agency of NOAA) and the Chemical Emergency Prevention and Preparedness Office of the EPA to perform offsite consequence analysis required by Section 112(r) of the Clean Air Act Amendments of 1990.

The worst-case accidental release scenario assumed the aqueous ammonia storage tank is punctured and empties within 10 minutes into a catch basin or bermed area located beneath the tank that will contain the entire contents of the tank. Other parameters include an atmospheric stability classification of "F" and a wind speed of 1.0 meters/second. The ammonia plume was predicted to extend approximately 528 feet from the ammonia storage tank at a concentration of 200 ppm. The assumptions used in this analysis include the following:

- A release of 10,500 pounds of ammonia, representing a release of 16,000 gallons of a 24 percent ammonia solution
- An ammonia storage temperature of 75 °F
- A diked area of 240 square feet (12 feet wide by 20 feet long)
- Rural surroundings

Based on this conservative modeling analysis (LECEF is designed for a 10,000 gallon tank and 19 percent aqueous ammonia solution, the worst case accident is not expected to result in an offsite release and will not pose a significant risk to the public.

8.12.4 Fire and Explosion Risk

Table 8.12-4 describes the flammability for the hazardous materials that will be onsite. Aqueous ammonia, which constitutes the largest quantity of hazardous materials onsite (except for the oil contained in the equipment), is incombustible in its liquid state. Ammonia evaporating as a gas from a leak or spill of the aqueous solution is combustible within a narrow range of concentrations in air. However, the evaporation rate is sufficiently low that the lower explosion limit (LEL) will not be reached. The lubrication oil is flammable and will be handled in accordance with a Hazardous Materials Business Plan (HMBP) to be approved by the City of San Jose Fire Department, Hazardous Materials Division. With proper storage and handling of flammable materials in accordance with the plan, the risk of fire and explosion at the generating facility should be minimal. The natural gas that will provide the site with fuel is flammable and could leak from the supply line that brings gas from PG&E's main pipeline. The risk of leakage is the normal type of risk encountered with transmitting natural gas via pipeline. Proper design, construction, and maintenance of the line will minimize leaks and the risk of fire or explosion. The line will be buried primarily in or adjacent to roadways.

The natural gas that will provide the facility with fuel is flammable and could leak from the supply line that brings gas from PG&E's main pipeline. The risk of leakage is the normal type of risk encountered with transmitting natural gas via pipeline. Proper design, construction, and maintenance of the line will minimize leaks and the risk of fire or explosion. The line will be buried primarily in or adjacent to roadways.

The closest San Jose fire station is Station No. 29 at 199 Innovation Drive. The station is approximately two miles away.

8.12.5 Cumulative Impacts

The primary potential cumulative impact from the use and storage of hazardous materials would be a simultaneous release from two or more sites of a chemical that will migrate offsite. Potentially, the two or more migrating releases could combine, thereby posing a greater threat to the offsite population than a single release by any single site. Hazardous materials that do not migrate, such as sulfuric acid, will not present a potential cumulative impact. To determine the potential for cumulative impacts, other sites in the vicinity that store and use ammonia need to be identified and analyzed. In addition, other chemicals in the vicinity with the ability to migrate offsite that could combine or interact with released ammonia must be identified and analyzed. The U.S. Dataport EIR reports that the Water Pollution Control Plant treatment facilities, located to the northwest, across Zanker Road, have a 29 percent aqueous ammonia system used for waste waster disinfection. The system is contained in a double-walled tank in a bermed containment area. Under a worst case scenario (City of San Jose, 2000), ammonia from the WPCP would not reach harmful concentrations off-site.

8.12.6 Proposed Mitigation Measures

The following subsections present measures the project plans to take during project construction and operation phases to mitigate risks in handling hazardous materials, particularly the risk of inadvertent spills or leaks that might pose a hazard to human health or the environment.

8.12.6.1 Pre-Construction Phase

The site-clearing or pre-construction phase will include the following City of San Jose mitigation measures included in the U.S. Dataport EIR to ensure that hazards and hazardous materials impacts are avoided or reduced to a less than significant level.

To be consistent with the U.S. Dataport EIR, a Soil Management Plan (SMP) and Health and Safety Plans (HSP)2 shall be submitted to the California Energy Commission Staff and copied to the Department of Toxic Substances Control, the City of San Jose Environmental Services Department, the San Jose Fire Department Hazardous Materials Division, and

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2 A Health and Safety Plan is a project-specific plan, generally prepared by each contractor working on a site, that describes safety measures to be followed during all phases of construction. It is designed to protect the health and safety of construction workers and the public during the construction period. This project's Health and Safety Plan may need to address training, worker protection, and monitoring requirements associated with the handling of contaminated, the removal of USTs, and the potential removal of friable asbestos containing material (ACM) and lead-based paint coated demolition.

Santa Clara County Department of Environmental Health prior to the start of construction or pre-construction activities.

The Soil Management Plan will address how DDT contaminated soil will be handled during construction and development of the site. Soil handling during site grading, excavation for foundations and utilities, and landscaping will be specifically discussed. The Soil Management Plan will also detail how excavated soil that may need offsite disposal will be stockpiled and tested for disposal and soil handling activities during on-going operation of the development.

8.12.6.2 Construction Phase

During facility construction, hazardous materials stored onsite will include small quantities of solvents, cleaners, sealants, lubricants, and 5-gallon emergency fuel containers. This section describes measures that will be taken to mitigate potential risks from hazardous material usage. Solvents, cleaners, sealants, and lubricants will be stored in a locked utility building, handled per the manufacturers' directions, and replenished as needed. The emergency fuel containers will be Department of Transportation (DOT)-approved 5-gallon safety containers secured to the construction equipment. The emergency fuel will be used when regular vehicle fueling is unavailable.

Regular fueling and oiling of construction equipment will be performed daily to reduce the potential for accidental releases. Fuel, oil, and hydraulic fluids will be transferred directly from a service truck to construction equipment tanks and will not otherwise be stored onsite. Fueling will be performed by designated, trained service personnel either before or at the end of the workday. Service personnel will follow standard operating procedures (SOPs) for filling and servicing construction equipment and vehicles. The SOPs, which are designed to reduce the potential for incidents involving the hazardous materials, include the following:

- Refueling and maintenance of vehicles and equipment will occur only in designated areas that are either bermed or covered with concrete or asphalt to control potential spills.
- Vehicle and equipment service and maintenance will be conducted only by authorized personnel.
- Refueling will be conducted only with approved pumps, hoses, and nozzles.
- Catch-pans will be placed under equipment to catch potential spills during servicing.
- All disconnected hoses will be placed in containers to collect residual fuel from the hose.
- Vehicle engines will be shut down during refueling.
- No smoking, open flames, or welding will be allowed in refueling or service areas.
- Refueling will be performed away from bodies of water to prevent contamination of water in the event of a leak or spill.
- When refueling is completed, the service truck will leave the project site.
- Service trucks will be provided with fire extinguishers and spill containment equipment, such as absorbents.

- Should a spill contaminate soil, the soil will be put in containers and disposed of as a hazardous waste.
- All containers used to store hazardous materials will be inspected at least once per week for signs of leaking or failure. All maintenance and refueling areas will be inspected monthly. Results of inspections will be recorded in a logbook that will be maintained onsite.

Small spills will be contained and cleaned up immediately by trained, onsite personnel. Larger spills will be reported via emergency phone numbers to obtain help from offsite containment and cleanup crews. All personnel working on the project during the construction phase will be trained in handling hazardous materials and the dangers associated with hazardous materials. An onsite health and safety person will be designated to implement health and safety guidelines and contact emergency response personnel and the local hospital, if necessary.

8.12.6.3 Operation Phase

During facility operation, some hazardous materials and two acutely hazardous materials will be stored onsite. Tables 8.12-3 and 4 describe the toxicity of the acutely hazardous and hazardous materials. Listed below are mitigation measures for minimizing the risks of hazardous material handling during facility operation.

8.12.6.3.1 Aqueous Ammonia

Aqueous ammonia will be used in an SCR process to control NO_x emissions created in the combustion chambers of the combustion turbines. The SCR system will include a reactor chamber, catalyst modules, ammonia storage system, and ammonia injection system. The aqueous ammonia, stored as a liquid solution of 19 percent ammonia and 81 percent water, will be injected into the reactor chamber. The rate of injection will be controlled by a monitoring system that uses sensors to determine the correct quantity of ammonia to feed to the reactor chamber. The reactor chamber will contain the catalyst modules and be located in a temperature zone of the HRSG where the catalyst will be most effective at the desired levels of plant operation**.**

The aqueous ammonia storage tank will be equipped with continuous tank level monitors, temperature and pressure monitors and alarms, and excess flow and emergency block valves. Containment will be provided; if there is an inadvertent release from the storage tank, the liquid will be contained within the secondary containment structure. The San Jose Fire Code requires that secondary containment be able to retain the spill from the largest single container or, in the case of multiple containers, 150 percent of the volume of the largest container, or 10 percent of the aggregate volume of all containers, whichever is greater. In addition, when a tank is outside, the secondary containment must also be able to contain 24 hours of rainfall from a 25-year storm. Vapor detection equipment will be installed to detect escaping ammonia and activate the automatic vapor suppression features.

Approximately once a week, one 6,500-gallon tanker trucks will deliver aqueous ammonia to the site, where it will be stored in a 10,000-gallon aboveground storage tank.

8.12.6.2.2 Hazardous Materials

All hazardous materials will be handled and stored in accordance with applicable codes and regulations. Mitigation measures will include paving and berming areas that are susceptible to potential leaks and/or spills. Wherever possible, double-walled piping will be used to minimize potential releases from ruptured piping. Piping and tanks will be protected from potential traffic hazards by concrete or pipe-type traffic bollards and barriers.

A worker safety plan, in compliance with applicable regulations, will be implemented. It will include training for contractors and operations personnel. Training programs will include safe operating procedures, the operation and maintenance of hazardous materials systems, proper use of PPE, fire safety, and emergency communication and response procedures. All plant personnel will be trained in emergency procedures, including plant evacuation and fire prevention. In addition, designated personnel will be trained as members of a plant hazardous material response team; team members will receive the first responder and hazardous material technical training to be developed in the HMBP. However, in the event of an emergency, plant personnel will defer to the City of San Jose Hazardous Incidence Team (HIT) at San Jose Fire Station No. 29 (199 Innovation Drive**).** Fire Station No. 29 and the HIT are approximately two miles away in northern San Jose, between Highways 101 and 880 (see Section 8.8.1.7, Socioeconomics, for additional information). For large spills, cities and counties provide mutual assistance. Santa Clara County will be the most likely second or backup responder.

8.12.6.4 Transportation/Delivery of Hazardous Materials

Hazardous and acutely hazardous materials will be delivered periodically to the facility. Transportation will comply with all DOT, U.S. Environmental Protection Agency (USEPA), California Department of Toxic Substances Control (DTSC), CHP, and California State Fire Marshal regulations for transporting hazardous materials. Under the California Vehicle Code, the CHP has the authority to adopt regulations for transporting hazardous materials in California. The CHP can issue permits and specify the route for hazardous material delivery. The key acutely hazardous material that will be delivered to the facility is the aqueous ammonia, and the Vehicle Code has special regulations for the transportation of hazardous materials that pose an inhalation hazard (Vehicle Code Section 32100.5). These and regulations concerning any of the other hazardous materials delivered to the facility will be complied with fully.

8.12.6.5 Hazardous Materials Plans

Hazardous materials handling and storage, and training in the handling of hazardous materials will be set forth in more detail in hazardous materials plans that will be developed by the applicant.

8.12.6.5.1 Hazardous Materials Business Plan (HMBP)

An HMBP is required by the California Code of Regulations (CCR) Title 19 and the Health and Safety Code (Section 25504). The plan will include an inventory and location map of hazardous materials onsite and an emergency response plan for hazardous materials incidents. The topics to be covered in the plan are:

- Facility identification
- Emergency contacts

- Inventory information (for every hazardous material)
- MSDS for every hazardous material
- Site map
- Emergency notification data
- Procedures to control actual or threatened releases
- Emergency response procedures
- Training procedures
- Certification

The HMBP will be filed with and administered by San Jose Fire Department.

8.12.6.5.2 Risk Management Plan/Process Safety Management Plan

Because acutely hazardous materials will be stored and used at the facility, an RMP will be required. The requirements for an RMP are found in the CAA and its regulations (40 CFR 68 Subpart G) and under California's Accidental Release Prevention Program (CalARP) pursuant to Health and Safety Code Sections 25331 through 25543.3. The California program is similar to the federal program but may be more stringent in some areas. The federal program currently exempts ammonia with concentrations less than 20 percent but the CalARP program will only exempt portions of the aqueous ammonia process that can be demonstrated to have a partial pressure of the regulated substance in the mixture (solution), under the handling or storage conditions, which is less than 10 millimeters of mercury (mm Hg).

The RMP, if still required at time of initial operation, will be filed with and administered by the San Jose Fire Department. The RMP will be in addition to the HMBP. Included in the RMP will be a hazard assessment to evaluate the potential effects of accidental releases, a program for preventing accidental releases, and a program for responding to accidental releases to protect human health and the environment. The basic elements of an RMP are:

- Description of the facility
- Accident history of the facility
- History of equipment used at the facility
- Design and operation of the facility
- Site map(s) of the facility
- Piping and instrument diagrams of the facility
- Seismic analysis
- Hazard and operability study
- Prevention program
- Consequence analysis
- Offsite consequence analysis
- Emergency response
- Auditing and inspection
- Record keeping
- Training
- Certification

A Process Safety Management Plan (PSM) probably will not be required under OSHA, because the OSHA regulations list aqueous ammonia only for solutions above 44 percent.

The requirements for a PSM are very similar to those for an RMP; an offsite consequences analysis is not required for the PSM. The RMP may be sufficient to also meet the requirements of a PSM plan, if required.

8.12.6.5.3 Spill Prevention Control and Countermeasure Plan

Federal and California regulations require a Spill Prevention Control and Countermeasures (SPCC) plan if petroleum products above certain quantities are stored in aboveground storage tanks (AST). Both federal and state laws apply only to petroleum products that might be discharged to navigable waters. If stored quantities are equal to or greater than 660 gallons for a single tank, or equal to or greater than 1,320 gallons total, an SPCC must be prepared.

Since the facility will store more than 1,320 gallons of petroleum products in ASTs, an SPCC plan will be prepared**.**

8.12.6.5 Monitoring

An extensive monitoring program will not be required, because environmental effects during the construction and operation phases of the facility are expected to be minimal. However, sufficient monitoring will be performed during all phases to ensure that the proposed mitigation measures are complied with and that they are effective in mitigating any potential environmental effects.

8.12.7 Laws, Ordinances, Regulations, and Standards

The storage and use of hazardous materials and acutely hazardous materials at the facility are governed by federal, state, and local laws. Applicable laws and regulations address the use and storage of hazardous materials to protect the environment from contamination and facility workers and the surrounding community from exposure to hazardous and acutely hazardous materials. The applicable LORS are summarized in Table 8.12-5.

TABLE 8.12-5
Applicable Laws, Ordinances, Regulations, and Standards

LOR	Applicability	Conformance (Section No.)
Federal:		
CERCLA/SARA		
Section 302	Requires certain planning activities when EHS are present in excess of TPQ. The facility will have ammonia in concentrations less than 20 percent and is exempted from federal requirements.	An RMP is not required, per Federal LORS, to be prepared to describe planning activities. (Section 8.12.6.5).
Section 304	Requires notification when there is a release of hazardous material in excess of its RQ.	An HMBP will be prepared to describe notification and reporting procedures (Section 8.12.6.5).
Section 311	Requires MSDS for every hazardous material to be kept onsite and submitted to SERC, LEPC, and the local fire department.	The HMBP to be prepared will include MSDSs and procedures for submission to agencies (Section 8.12.6.5).

TABLE 8.12-5
Applicable Laws, Ordinances, Regulations, and Standards

LOR	Applicability	Conformance (Section No.)
Section 313	Requires annual reporting of releases of hazardous materials.	The HMBP to be prepared will describe reporting procedures (Section 8.12.6.5).
CAA	The facility will have ammonia in concentrations less than 20 percent and is exempted from federal requirements.	An RMP is not required to be prepared to comply with federal LORS (Section 8.12.6.5).
Clean Water Act (CWA)	Requires preparation of an SPCC plan if oil is stored above certain quantities.	An SPCC will be prepared (Section 8.12.6.5).
California:		
Health and Safety Code, Section 25500, et seq. (Waters Bill)	Requires preparation of an HMBP if hazardous materials are handled or stored in excess of threshold quantities.	An HMBP will be prepared (Section 8.12.6.5).
CalARP Program. Health and Safety Code, Section 25531 through 25543.4 (La Follette Bill)	Requires registration with local CUPA or lead agency and preparation of an RMP if acutely hazardous materials are handled or stored in excess of TPQs.	An RMP will be prepared, if still required, that will describe procedures for registration with San Jose Fire Department (Section 8.12.6.5).
Aboveground Petroleum Storage Act	Requires entities that store petroleum in ASTs in excess of certain quantities to prepare an SPCC.	An SPCC will be prepared (Section 8.12.6.5).
Safe Drinking Water and Toxics Enforcement Act (Proposition 65)	Requires warning to persons exposed to a list of carcinogenic and reproductive toxins and protection of drinking water from same toxins.	The site will be appropriately labeled for chemicals on the Proposition 65 list.
Local:		
San Jose Fire Code, as amended	Requires proper storage and handling of hazardous materials	See Section 8.12.6.

EHS Extremely hazardous substance.
SERC State emergency response commission
LEPC Local emergency planning committee.
TPQ Threshold Planning Quantity
TQ Threshold Quantity
MSDS Material Safety Data Sheet
RMP Risk Management Plan
HMBP Hazardous Materials Business Plan
CWA Clean Water Act
CAA Clean Air Amendments
SPCC Spill Prevention Control and Countermeasure Plan
CUPA Certified Unified Programming Agency
CERCLA/SARA omprehensive Environmental Response, Compensation and Liability Act/Superfund Amendments and Reauthorization Act

8.12.7.1 Federal

Hazardous materials are governed under CERCLA, the CAA, and the CWA.

8.12.7.1.1 CERCLA

SARA, an amendment to CERCLA, governs hazardous materials. The applicable part of SARA for the proposed project is Title III, otherwise known as the Emergency Planning and Community Right-To-Know Act of 1986 (EPCRA). Title III requires states to establish a process for developing local chemical emergency preparedness programs and to receive and disseminate information on hazardous materials present at facilities in local communities. The law provides primarily for planning, reporting, and notification concerning hazardous materials. Key sections of the law are:

- Section 302—requires that certain emergency planning activities be conducted when EHSs are present in excess of their TPQs. EHSs and their TPQs are found in Appendices A and B to 40 CFR Part 355.
- Section 304—Requires immediate notification to the LEPC and the SERC when a hazardous material is released in excess of its reportable quantity (RQ). If a CERCLA-listed hazardous substance RQ is released, notification must also be given to the National Response Center in Washington, D.C. (RQs are listed in 40 CFR Part 302, Table 302.4). These notifications are in addition to notifications given to the local emergency response team or fire personnel.
- Section 311—Requires that either MSDSs for all hazardous materials or a list of all hazardous materials be submitted to the SERC, LEPC, and local fire department.
- Section 313—Requires annual reporting of hazardous materials released into the environment either routinely or as a result of an accident.

8.12.7.1.2 CAA

Regulations (40 CFR 68) under the CAA are designed to prevent accidental releases of hazardous materials. The regulations require facilities that store a Threshold Quantity (TQ) or greater of listed hazardous materials to develop a Risk Management Plan (RMP), including hazard assessments and response programs to prevent accidental releases of certain chemicals. Section 112(r)(5) of the CAA discusses the regulated chemicals. These chemicals are listed in 40 CFR 68.130. Aqueous ammonia is a listed substance, and its TQ for solutions of 20 percent and greater is 20,000 pounds of solution.

8.12.7.1.3 CWA

The Spill Prevention, Control, and Countermeasures (SPCC) program under the CWA is designed to prevent or contain the discharge or threat of discharge of oil into navigable waters or adjoining shorelines. Regulations (40 CFR 112) under the CWA require facilities to prepare a written SPCC Plan if they store oil and its release would pose a threat to navigable waters. The SPCC program is applicable if a facility has a single oil aboveground storage tank (AST) with a capacity greater than 660 gallons, total aboveground tank storage greater than 1,320 gallons, or underground storage capacity greater than 42,000 gallons.

Other related federal laws that address hazardous materials but do not specifically address their handling, are the Resource Conservation and Recovery Act (RCRA), which is discussed in Section 8.13, and the Occupational Safety and Health Act (OSHA), which is discussed in Section 8.7.

8.12.7.2 State

California laws and regulations relevant to hazardous materials handling at the facility include Health and Safety Code Section 25500 (hazardous materials), Health and Safety Code Section 25531 (acutely hazardous materials), and the Aboveground Petroleum Storage Act (petroleum in aboveground tanks).

8.12.7.2.1 Health and Safety Code Section 25500 (Waters Bill)

This law is found in the California Health and Safety Code, Section 25500, et seq., and in the regulations to the law in 19 CCR Section 2620, et seq. The law requires local governments to regulate local business storage of hazardous materials in excess of certain quantities. The law also requires that entities storing hazardous materials be prepared to respond to releases. Those using and storing hazardous materials are required to submit an HMBP to their local administering agency (AA) and to report releases to their AA and the Governor's Office of Emergency Services. The threshold quantities for hazardous materials are 55 gallons for liquids, 500 pounds for solids, and 200 cubic feet for compressed gases measured at standard temperature and pressure.

8.12.7.2.2 Health and Safety Code Section 25531 (La Follette Bill)

Found in the California Health and Safety Code, Section 25531, et seq., the law regulates the registration and handling of acutely hazardous materials. Acutely hazardous materials are any chemicals designated as an extremely hazardous substance by the USEPA as part of its implementation of SARA Title III. Health and Safety Code Section 25531 expands the programs mandated by the Waters Bill and overlaps or duplicates some of the requirements of SARA and the CAA. Facilities handling or storing acutely hazardous materials at or above TPQs must register with their local AA and prepare an RMP, formerly known as a Risk Management and Prevention Program (RMPP). The RMP program, also known as the Accidental Release Prevention (ARP) program, is regulated under Title 19, CCR, Chapter 4.5. The TPQ for ammonia is 500 pounds, exempting portions of the aqueous ammonia process that can be demonstrated to have a partial pressure of the regulated substance in the mixture (solution), under the handling or storage conditions, which is less than 10 millimeters of mercury (mm Hg).

Steven Demello, Manager, Hazardous Materials Unit, The Office of Emergency Services (OES), stated on June 11, 2001, that they will initiate formal rulemaking for the California Accidental Release Prevention (CalARP) Program Phase 2 regulations, pursuant to HSC, Chapter 6.95, Article 2. The Phase 2 regulatory process includes changes to the listing and thresholds for CalARP Program toxic regulated substances in Table 3, Section 2770.5, including establishing a minimum compliance concentration for aqueous ammonia at 20 percent and setting the threshold at 1,000 pounds

8.12.7.2.3 Aboveground Petroleum Storage Act

This law is found in the Health and Safety Code at sections 25270 to 25270.13 and is intended to ensure compliance with the federal CWA. The law applies if a facility has an AST with a capacity greater than 660 gallons or a combined AST capacity greater than 1,320 gallons and if there is a reasonable possibility that the tank(s) may discharge oil in "harmful quantities" into navigable waters or adjoining shore lands. If a facility falls under these criteria, it must prepare an SPCC. The law does not cover AST design, engineering, construction, or other technical requirements, which are usually determined by local fire departments.

8.12.7.2.4 Safe Drinking Water and Toxics Enforcement Act (Proposition 65)

This law identifies chemicals that cause cancer and reproductive toxicity, informs the public, and prevents discharge of the chemicals into sources of drinking water. Lists of the chemicals of concern are published and updated periodically. The Act is administered by California's Office of Environmental Health Hazard Assessment. Some of the chemicals to be used at the facility are on the cancer-causing and reproductive-toxicity lists of the Act.

8.12.7.3 Local

The City of San Jose has the responsibility for administering hazardous materials requirements and ensuring compliance with federal and state laws. The site is currently being annexed into San Jose. In addition, the county has requirements over all cities in some areas. Therefore, where applicable, the laws and enforcement procedures of both entities are discussed below.

8.12.7.3.1 Santa Clara County

The ordinance regulating hazardous materials in the county is the Santa Clara County Storage Ordinance. This ordinance has provisions similar to those found in the amended San Jose Fire Code; both arose from the Model Hazardous Materials Storage Ordinance developed by the Santa Clara County Fire Chief's Association. Santa Clara County is also the area CUPA and is responsible for overseeing the agencies administering RMPs filed by businesses located in the county. San Jose is a Participating Agency of the CUPA and actually administers the RMP program. The County is the regulatory body for all hazardous waste generated in the County (see Section 8.13, Waste Management).

8.12.7.3.2 City of San Jose

The city has a Hazardous Materials Program; it was created in 1983 after the City adopted the Model Hazardous Materials Storage Ordinance. This ordinance was developed jointly by the Santa Clara County Fire Chief's Association and representatives from the business community, environmental groups, and other environmental regulatory agencies. The Model Ordinance has been amended into the city's current ordinance, the San Jose Fire Code, which consists of the Uniform Fire Code amended by the city to fit its needs.

The Hazardous Materials Program is a division of the Fire Department. It is responsible for ensuring that businesses and industry store and use hazardous materials safely and in conformance with various regulatory codes. The Hazardous Materials Division administers the RMP program and performs annual inspections at established facilities to verify that hazardous materials are properly stored and handled and that the types and quantities of materials reported in a firm's Hazardous Materials Management Plan are accurate. In addition to enforcement of the San Jose Fire Code, the Division enforces the California Underground Storage Tank Regulations (California H&S Code, Chapter 6.7) and the California Hazardous Materials Business Plan Regulations (California H&S Code, Chapter 6.95).

8.12.7.4 Codes

The design, engineering, and construction of hazardous materials storage and dispensing systems will be in accordance with all applicable codes and standards, including the following:

- California Vehicle Code, 13 CCR 1160, et seq.—Provides the CHP with authority to adopt regulations for the transportation of hazardous materials in California.
- The Uniform Fire Code, Article 80—The hazardous materials section of the Fire Code. Local fire agencies or departments enforce this code and can require that an HMBP and a Hazardous Materials Inventory Statement be prepared. This requirement and the Waters Bill requirement for an HMBP can usually be satisfied in a single combined document.
- State Building Standard Code, Health and Safety Code Sections 18901 to 18949—Incorporates the UBC, Uniform Fire Code, and Uniform Plumbing Code.
- The American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section VIII.
- The American National Standards Institute (ANSI) K61.1.

8.12.8 Involved Agencies and Agency Contacts

Several agencies regulate hazardous materials, and they will be involved in regulating the hazardous materials stored and used at the facility. At the federal level, the USEPA will be involved; at the state level, the California Environmental Protection Agency (CalEPA) will be involved. However, local agencies enforce hazardous materials laws primarily. For the project, the local agencies involved will be Santa Clara County and San Jose. The persons to contact are shown in Table 8.12-6.

TABLE 8.12-6
Agency Contacts

Type Material	Agency	Contact	Title	Telephone
All Hazardous Materials	City of San Jose		Manager, Hazardous Materials Program	408/277-4659
Hazardous Materials/ Hazardous Waste	Santa Clara County Department of Environmental Health 2220 Moor Park Ave; Room 204 E; San Jose, CA 95128	Gordon McPhaill	Director of Hazardous Materials	408/299- 6930
Hazardous Materials/ Hazardous Waste	Santa Clara County Department of Environmental Health 2220 Moor Park Ave; Room 204 E; San Jose, CA 95128	Nicole Pullman	Hazardous Materials/ Waste Supervisor	408/299-8850
Hazardous Materials-RMPs	Santa Clara County Department of Environmental Health 2220 Moor Park Ave; Room 204 E; San Jose, CA 95128	Nicole Pullman	Risk Management Plan Program Manager	408/299- 8850
Hazardous Materials Response	Central Fire Department Santa Clara County 14700 Winchester Blvd.; Los Gatos, CA 95032	Steve Staump	Operations Manager	408/378-4010

TABLE 8.12-6
Agency Contacts

Type Material	Agency	Contact	Title	Telephone
Hazardous Materials Response	Central Fire Department Santa Clara County 14700 Winchester Blvd; Los Gatos, CA 95032	John Justice	HM Team Leader	408/378-4010
Hazardous Materials-RMPs	City of San Jose Fire Department, Hazardous Materials Division 199 Innovation Drive; San Jose, CA 95134	Mike Randolph	Hazardous Materials Inspector	408/2774659
Hazardous Materials Response	City of San Jose Fire Department 199 Innovation Drive; San Jose, CA 95134	Terry Kerns; Oscar Bazurto; Joe Reich	Captain-HIT	408/277-4677

8.12.9 Permits Required and Permit Schedule

Santa Clara County and San Jose require the following permits:

Santa Clara County

Hazardous Materials Storage Permit. Similar to the permit required by San Jose and for unincorporated areas. The permit will be obtained prior to the storage of hazardous materials at the site.

Hazardous Waste Generator Permit. Required for any business that generates hazardous waste. The county is the designated CUPA for all areas of the county except the Cities of Santa Clara and Gilroy and therefore handles all hazardous waste enforcement activities within its jurisdiction, including the City of San Jose(see Section 8.13.9). The permit will be obtained prior to generation of hazardous waste at the site.

Tank Permit. A tank permit must be obtained for hazardous materials storage tanks that exceed 60 gallons. The permit will be obtained prior to the storage of hazardous materials at the site.

City of San Jose

Hazardous Materials Storage Permit. An HMBP must be submitted as part of the application for the permit. The permit will be obtained prior to the storage of hazardous materials at the site**.**

Compressed Gases Permit. Required to store, use, or handle at normal temperatures and pressures compressed gases in excess of certain amounts. The permit will be obtained prior to the storage of compressed gases at the site.

Welding and Cutting Operations Permit. Required to conduct welding and cutting operations in any occupancy or at a temporary job site involving construction permitted and regulated by the Building Official. The permit will be obtained prior to the commencement of construction at the site.

8.12.10 References

Bruhns, W. 2001. Telephone conversation with Will Bruhns, Ombudsman, California Regional Water Quality Control Board, Region 2. July 5.

California Office of Emergency Services (OES), Steven Demello, Manager, Hazardous Materials Unit. July 2001.

City of San Jose. 2000. Draft Environmental Impact Report for the U.S. Dataport Planned Development Zoning. November 2000.

City of San Jose. 2001. Final Environmental Impact Report for the U.S. Dataport Planned Development Zoning. January 2001.

Cuns, K. 2001 Telephone conversation with Karen Cuns Central Fire Department, Santa Clara County, July 3.

Kerns, T. 2001. Telephone conversation with Terry Kerns, Captain, HIT, City of San Jose, July 2

Pullman, N. 2001 Telephone conversation with Nicole Pullman, Lead Hazardous Materials Specialist, Hazardous Materials Division, Santa Clara County, July 3.

Randolph, M. 2001. Telephone conversation with Mike Randolph, Hazardous Materials Inspector, Hazardous Materials Division, City of San Jose. July 5.

U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control, National Institute for Occupational Safety and Health. 1990. *NIOSH Pocket Guide to Chemical Hazards.*

HAZARDOUS MATERIALS

A WATER TREATMENT SKID CHEMICAL STORAGE

- ALUMINUM SULFATE, SODIUM ALUMINATE, OR POLYALUMINUM CHLORIDE
- CALCIUM OXIDE OR CALCIUM HYDROXIDE
- CLEANING CHEMICALS /DETERGENTS
- COAGULANT AID POLYMER (E.G., NALCO NALCOLYTE 8799)
- FERRIC CHLORIDE OR FERRIC SULFATE
- FILTER AID POLYMER (E.G. NALCO NALCLEAR 7763)
- LABORATORY REAGENTS
- MAGNESIUM OXIDE OR MAGNESIUM HYDROXIDE
- PHOSPHONATE (E.G. NALCO 7385)
- SODIUM HYDROXIDE (NaOH)

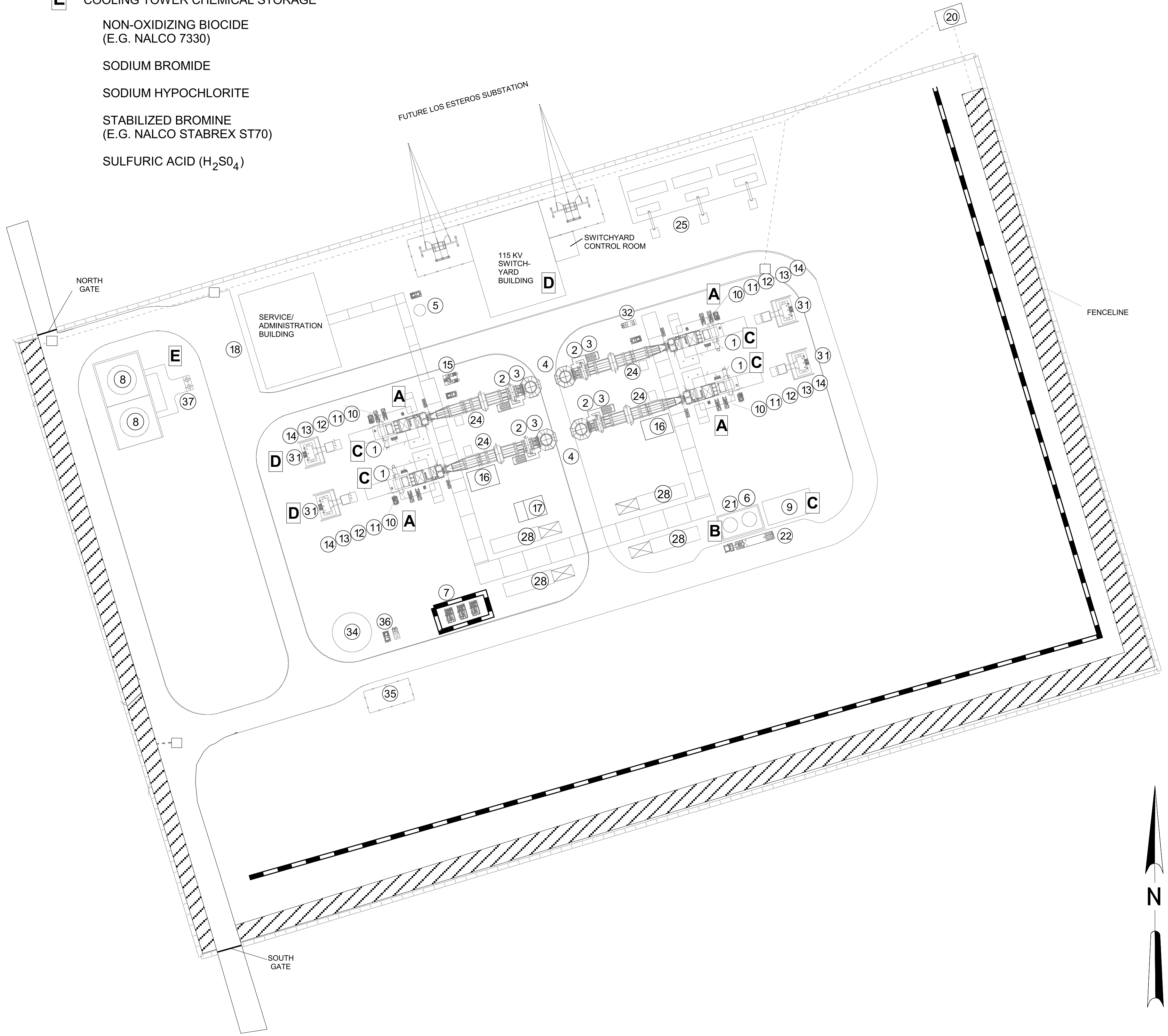
B AQUEOUS AMMONIA (19% NH3)

C LUBRICATING OIL

D MINERAL INSULATING OIL

E COOLING TOWER CHEMICAL STORAGE

- NON-OXIDIZING BIOCIDE (E.G. NALCO 7330)
- SODIUM BROMIDE
- SODIUM HYPOCHLORITE
- STABILIZED BROMINE (E.G. NALCO STABREX ST70)
- SULFURIC ACID (H_2SO_4)



EQUIPMENT

ITEM NUMBER	DESCRIPTION
1	COMBUSTION TURBINE ENGINE
2	HRSG BOILER (DUCT ONLY)
3	SCR UNIT
4	EXHAUST STACK
5	POTABLE WATER TANK
6	FUTURE AMMONIA TANK
7	FUEL GAS COMPRESSOR
8	COOLING TOWER (2 CELLS)
9	LUBE OIL STORAGE
10	STARTING HYDRAULIC SKID
11	PERFORMANCE SKID
12	DEMIN. WTR. FILTER SKID
13	AUXILIARY WATER INJECTION PUMPS
14	GAS FUEL FILTER
15	AIR COMPRESSOR/AIR DRYER
16	OIL/WATER SEPARATOR AND WASH WATER DRAIN TANK
17	WASTE WATER SUMP
18	PARKING
19	STORMWATER CATCH BASIN
20	STORMWATER DISCHARGE SUMP/PUMP
21	AMMONIA STORAGE TANK AND PUMP
22	AMMONIA TANK LOADING AREA
24	AMMONIA VAPORIZER SKID
25	SWITCHGEAR MEDIUM VOLTAGE
28	CTG CHILLER SKID
31	50 MVA TRANSFORMER
32	BLACK START GENERATOR
34	FIRE WATER TANK
35	FUEL GAS METERING
36	FIREWATER PRIMARY AND EMERGENCY PUMPS
37	AUXILIARY COOLING WATER PUMP

LEGEND

- UNDERGROUND STORMWATER DRAIN LINE
- SOUND WALL
- STORMWATER RETENTION AREA

100 0 100 Feet

SCALE IS APPROXIMATE

1:1500

NOTE: Drawing is to scale. Width of the sound walls and the width of the retention area are not to scale.

FIGURE 8.12-1
HAZARDOUS MATERIALS STORAGE LOCATIONS

APPLICATION FOR CERTIFICATION FOR LOS ESTEROS CRITICAL ENERGY FACILITY

CH2MHILL

CH2M Hill RDD ArcView Project File \\Thor\cart1\rddgis\san_jose\phase_one_mike_wood_rev.apr 2:35 p.m. 08-3-2001

8.13 Waste Management

This section evaluates the potential effects on human health and the environment from nonhazardous and hazardous waste generated at the facility.

Section 8.13.1 describes the current condition of the proposed site, and Section 8.13.2 describes the waste and waste streams that are expected to be generated by the project. Section 8.13.3 describes waste disposal sites for nonhazardous and hazardous waste, and Section 8.13.4 describes methods that will be employed to manage the generated waste and mitigate its impacts on the environment. Section 8.13.5 discusses cumulative impacts, and Section 8.13.6 describes waste monitoring. Section 8.13.7 presents LORS that apply to the generated waste; Section 8.13.8 describes agencies that have jurisdiction over the generated waste and persons to contact in those agencies. Section 8.13.9 describes permits required for waste generated and a schedule for obtaining those permits. Section 8.13.10 provides the references used to prepare this section.

8.13.1 Environmental Condition of Site

The following discussion is based upon a Phase I Environmental Site Assessment (ESA) and a partial Phase II ESA evaluating Soil and water contamination was conducted by Lowney Associates for the U.S. Dataport Planned Development Zoning (PDZ) Draft Environmental Impact Report (DEIR) published in November 2000 by the City of San Jose. The investigations included site reconnaissance, a review of available documents, maps, and aerial photographs and a database list report. In addition, soil and ground water samples were collected from portions of the site and analyzed for selected metals, pesticides and petroleum hydrocarbons. An evaluation of the Risk Management Plan for the San Jose-Santa Clara Water Pollution Control Plant (WPCP) as to the potential effects on the project site was also prepared by Lowney Associates in June 2000. The purpose of these investigations was to identify existing and potential contamination sources, evaluate potential existing impacts to the project, and develop recommendations for any further investigations that may be required. Copies of the Phase I investigation report is included in Appendix 8.13A.

The U.S. Dataport site investigation consisted of reviewing three adjoining properties: the Cilker property, the former Lin-Hom property (recently purchased by c*Power), and City of San Jose Buffer Land. Since the LECEF facility, as proposed in this AFC, is solely located on a portion of the former Lin-Hom property, the following discussion relates to only the pertinent portions of the reports referenced above.

8.13.1.1 Historical Uses and Surrounding Areas

The c*Power property was previously developed with orchard trees and at least one residence. The orchard trees were removed by 1980 while the property was developed with additional residential structures and several plant nursery complexes that are currently abandoned and have become dilapidated.

Portions of the Cilker property, to the north and east of the c*Power property, are used for row crops. A tractor service storage yard and a trailer that is being used as an office are located in the southwest portion of the Cilker property. To the north of the storage yard is a warehouse-type building that houses offices, a walk-in cooler for produce, a shop and storage area. In addition to the commercial buildings, three residences are located on the site. They include a small house and a trailer just north of the tractor service storage yard, and a third residence and surrounding landscaping in the southeastern corner of the property.

The San Jose-Santa Clara Water Pollution Control Plant and associated buffer lands and sludge drying ponds are located to the west, northwest, and north of the c*Power property.

8.13.1.2 Site Inspection

Structures within the plant nursery complexes located on the c*Power parcel include greenhouses, a vegetable cooler, agricultural chemical and other storage sheds, and boilers used to provide steam heat for greenhouses. Fuel (one gasoline and two diesel underground storage tanks) and water storage tanks are also present within this area. As many as five water supply wells are also reported to be located on the c*Power property.

Because of the historic agricultural uses of this property and the presence of underground storage tanks, the Phase I soil samples were collected and analyzed from pesticide storage and mixing areas, around the greenhouses, and from areas around underground storage tanks.

Pesticides, including total DDT, were found at levels up to 11,030 micrograms per kilogram (µg/kg). This concentration is greater than the 1,000 µg/kg level above which the soil would be considered hazardous waste by the State of California if removed from the site. However, levels of total DDT are below the U.S. Environmental Protections Agency's (USEPA) preliminary remediation goal (PRG) of 12,000 µg/kg for industrial uses. Lead was found at concentrations of up to 310 milligrams per kilogram (mg/kg) and arsenic concentrations ranged from 11 mg/kg to 67 mg/kg. The lead and arsenic concentrations are higher than typical background levels, however they are well below State of California Total Threshold Limit Concentration (TTLC), the level above which the soil would be considered hazardous waste under Title 22 of the California Code of Regulations.[1]

Petroleum hydrocarbons were not detected in the soil or in ground water samples collected near existing underground fuel storage tanks.

8.13.1.3 Database Review

During the Phase I ESA, a regulatory agency database report was obtained and reviewed to help establish if contamination incidents have been reported within the site vicinity. The Phase I investigation report, included in Appendix 8.13A, presents a list of the database sources reviewed, a detailed description of the sources, and a radius map indicating the location of the reported facilities relative to the project site.

The Cilker property to the east was reported to have a 3,000 gallon gasoline UST and ground water monitoring well. The U.S. Dataport DEIR reported that the UST was removed in 1998 and case closure/no further action was granted by the Santa Clara Valley Water District in 1998. No other sites were identified in the project vicinity.

[1] The TTLC for lead is 1,000 mg/kg and for arsenic is 500 mg/kg.

8.13.1.4 Recommendations

Agricultural Chemicals

As previously discussed, the project site, having been used for agricultural purposes, has elevated levels of residual pesticides, including total DDT, dieldrin, endrin, lead and arsenic, as found in soil samples. Upon construction of the LECEF project, the site will be largely covered by buildings and associated paving, and there are no proposed residential or other sensitive uses planned for the site. Concentrations of residual pesticides, including lead and arsenic, are below the USEPA's PRGs for industrial uses. In addition, with the exception of Total DDT, concentrations found in the soil are well below the State of California TTLC, the level above which the soil would be considered hazardous waste per Title 22 of the California Code of Regulations.[2] At the concentrations found, the residual pesticides on the site are not a significant threat to human health in an industrial setting, if the soil remains in place. Construction workers could be exposed to pesticide residues or other contamination during site grading, however.

It should be noted that if on-site soil is to be removed from the site, additional characterization will be required prior to transport. Total DDT concentrations in soil samples collected from the upper six inches of soil exceed California's hazardous waste criteria TTLC of one part per million (mg/kg).

Fuel Storage Tanks

The project proposes to remove the existing underground and above ground fuel storage tanks on the site in accordance with state and local regulations.

Agricultural and Water Supply Wells

Existing on-site agricultural and water supply wells, if discovered during pre-construction ground-clearing activities or otherwise, will be properly abandoned in accordance with Santa Clara Valley Water District requirements as a part of site development.

Asbestos and Lead-Based Paint

Because the existing on-site buildings, including residences, were built prior to 1980, asbestos-containing materials (ACMs) may be present. In addition, several buildings on the site were built prior to 1978 when the Consumer Product Safety Commission banned the use of lead as an additive in paint. Since several of the on-site buildings were built prior to 1978, the buildings may contain lead-based paint. During a February 2000 site visit by Lowney Associates, accessible areas of buildings on the Cilker property were observed for evidence of damaged and/or peeling paint. In general, the painted surfaces appeared to be in good condition.

8.13.2 Project Waste Generation

Waste will be generated at the site during facility pre-construction, construction and operation. Types of waste will include demolition debris, wastewater, solid nonhazardous waste, and liquid and solid hazardous waste. Solid nonhazardous waste will also be generated during the construction of the electric transmission line, the natural gas supply line, various water lines, and access roads.

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[2] The TTLC for lead is 1,000 mg/kg and for arsenic is 500 mg/kg.

8.13.2.1 Pre-Construction Phase

The project would demolish the existing buildings on the site and debris will be removed to prepare site for construction activities.

Nonhazardous Solid Waste

The nonhazardous solid waste remaining onsite will be removed by a waste removal company. The portion of the waste that is recyclable will be recovered and the remaining waste deposited in a Class III landfill. The quantity of this waste is currently unknown.

Nonhazardous Wastewater

Nonhazardous water found on the site or produced by the various clean-up activities incorporated as part of the pre-construction phase will be collected in a drum or container and deposited in the San Jose sewer.

Hazardous Waste

Hazardous waste will be removed by a certified hazardous waste collection company and either recycled or deposited in a Class I landfill in full compliance with all applicable LORS.

Asbestos

Due to the construction of the on-site structures prior to 1980, ACMs may be present. An asbestos survey must be conducted under National Emissions Standards for Hazardous Air Pollutants (NESHAP) guidelines. If discovered, all potentially friable ACM is required to be removed prior to building demolition activities that may disturb the ACM.

Lead-Based Paint

On-site structures are currently being surveyed for the presence of lead-based paint as required prior to demolition. If the paint is still bonded to the building components, its removal is not required prior to demolition. However, the personnel conducting the demolition must comply with the training, worker protection, and monitoring requirements of the California Occupational Safety and Health Administration (Cal/OSHA) Lead in Construction Standard, Title 8, California Code of Regulations (CCR) 1532.1. If the lead-based paint is peeling, flaking or blistered, it should be removed prior to demolition. It is assumed that such paint will become separated from the building components during demolition activities; therefore it is required to be managed and disposed in a separate waste stream.

Underground Storage Tanks (USTs)

A limited phase II environmental site assessment did not detect petroleum hydrocarbons in the soil or ground water near existing USTs. Prior to construction activities, the USTs will be removed in accordance with applicable regulations. Although additional soil and groundwater sampling will be required as part of the UST removal process, the collected data does not indicate that the USTs have significantly impacted the site.

Contaminated Soil

A limited phase II environmental site assessment (ESA) has been completed for the 55-acre c*Power property to determine whether native soil has been contaminated with residual pesticides and associated metals (arsenic, lead, and mercury). The main pesticide detected was DDT and the related compounds DDD and DDE, collectively referred to as total DDT.

Total DDT levels up to 11,030 µg/kg were detected. This concentration is greater than the 1,000 µg/kg TTLC. The TTLC is the level above which a solid waste is considered hazardous per Title 22 of the California Code of Regulations.

The total DDT levels detected do not exceed the PRG of 12,000 µg/kg for industrial use. The PRGs are risk-based concentrations developed by EPA Region 9 for use as screening levels in determining if further evaluation is warranted, in prioritizing areas of concern, in establishing initial cleanup goals, and in estimation of potential health risks. The PRGs are chemical concentration that correspond to a fixed level of risk (either a cancer risk of one-in-one-million or a non-carcinogenic hazard quotient of one, whichever occurs at a lower concentration).

Lead and arsenic concentrations detected were higher than typical background levels which are commonly less than 50 mg/kg and less than 10 mg/kg, respectively. However, the levels detected are well below their respective TTLC values of 1,000 and 500 mg/kg.

Since the detected soil contamination levels do not exceed PRG values for industrial use, the detected concentrations do not pose a significant threat to human health in a commercial or industrial setting.

If native soil is required to be hauled off-site as part of the pre-construction site preparation activities, additional characterization will be performed prior to transport.

8.13.2.2 Construction Phase

During construction, the primary waste generated will be solid nonhazardous waste. However, some nonhazardous liquid waste and both solid and liquid hazardous waste will also be generated. Most of the hazardous wastes will be generated at the plant site. Generation of hazardous waste during construction of the electric transmission line, natural gas supply line, and water supply and wastewater discharge lines will be minimal. The types of waste and their estimated quantities are described below.

8.13.2.2.1 Nonhazardous Solid Waste

Potential nonhazardous waste streams and their estimated volumes from construction of the electrical generating units, electric transmission line, natural gas supply line, and recycled water supply line, wastewater discharge line(s), stormwater drainage line, and site access roads are described here.

Paper, Wood, Glass, and Plastics

Paper, wood, glass, and plastics will be generated from packing materials, waste lumber, insulation, and empty nonhazardous chemical containers. Approximately 10 tons of these wastes will be generated during project construction. These wastes will be recycled where practical. Waste that cannot be recycled will be periodically disposed of in a Class III landfill. Onsite, the waste will be placed in dumpsters.

Concrete

Approximately 20 tons of excess concrete will be generated during construction. Waste concrete will be periodically disposed of in a Class III landfill or at clean fill sites, if available.

Metal

Metal will include steel from welding/cutting operations, packing materials, and empty nonhazardous chemical containers. Aluminum waste will be generated from packing materials and electrical wiring. Approximately 10 tons of metal will be generated during construction. Waste will be recycled where practical, and nonrecyclable waste will be deposited in a Class III landfill.

8.13.2.2.2 Nonhazardous Wastewater

Wastewater generated during construction will include sanitary waste, equipment wash water, storm water runoff, waste water from pressure testing the gas supply line after it is constructed, and water from excavation dewatering during construction. Sanitary waste will be collected in portable, self-contained toilets. Equipment washwater will be contained at specifically designated wash areas and disposed of off-site. Storm water runoff will be managed in accordance with a stormwater management plan that will be approved by the appropriate agencies prior to the start of construction.

After testing the gas supply pipeline, the spent hydrostatic test water will be filtered to collect any sediment and welding fragments. The water will be tested and, if not contaminated, will be discharged to the San Jose sanitary sewer in accordance with applicable regulatory requirements. Contaminated water will be delivered to the San Jose/Santa Clara WPCP. Water resulting from construction dewatering will be filtered and delivered to the WPCP.

8.13.2.2.3 Hazardous Waste

Most of the hazardous waste generated during construction will consist of liquid waste, such as flushing and cleaning fluids, passivating fluid (to prepare pipes for use), and solvents. Some hazardous solid waste such as welding materials and dried paint may also be generated.

Flushing and cleaning waste liquid will be generated as pipes are cleaned and flushed. The volume of flushing and cleaning liquid waste generated is estimated to be one to two times the internal volume of the pipes cleaned. The quantity of welding, solvent, and paint waste is expected to be minimal.

The construction contractor, considered to be the generator of hazardous waste during the construction phase, will be responsible for the proper handling of hazardous waste in compliance with all applicable federal, state, and local laws and regulations, including licensing, personnel training, accumulation limits and times, and reporting and record keeping. The hazardous waste will be collected in hazardous waste accumulation containers near the points of generation and removed daily to the contractor's 90-day hazardous waste storage area located at the site construction laydown area. Prior to expiration of the regulatory 90-day storage period, the waste will be manifested and transported to an authorized hazardous waste management facility by a permitted hazardous waste transporter.

8.13.2.3 Operation Phase

During facility operation, the primary waste generated will be nonhazardous wastewater. However, nonhazardous solid waste and varying quantities of both solid and liquid hazardous waste will also be generated periodically. Hazardous waste will not be generated by the operation of the electric transmission line, natural gas supply line, storm water drainage line, recycled water supply line, or waste water discharge line, or normal usage of the site access roads. The types of waste and their estimated quantities are discussed below.

8.13.2.3.1 Nonhazardous Solid Waste

The facility will produce maintenance and wastes typical of power generation operations. These will include rags, turbine air filters, broken and rusted metal and machine parts, defective or broken electrical materials, empty containers, and other miscellaneous solid wastes, including the typical refuse generated by workers and small office operations, and other miscellaneous solid wastes. The quantity generated is estimated to be about 20 cubic yards per year. Recycling of solid waste products, especially metallic waste, will be practiced systematically with separate on-site collection centers accumulating specific-type wastes.

8.13.2.3.2 Nonhazardous Wastewater

Section 7 (Water Supply) explains the expected flow rates for the generating facility. The flow rates, shown in the water balance diagrams provided in Figure 2.2-6, illustrate the expected waste water streams and flow rates. The waste water discharge system will collect both process waste water and sanitary waste water for discharge via a 2,700-foot-pipeline to the WPCP via a connection to the City sewer system on Zanker Road. Process waste water includes cooling tower blowdown, micro-filtration backwash, reverse osmosis concentrate, electrodialysis waste, and plant drainage. Sanitary wastewater includes waste water collected from sinks, toilets, and other sanitary facilities

The only other wastewater that will be generated at the site is equipment washwater and stormwater. Washdown washwater will pass through an oil/water separator prior to being collected into the waste water collection system and discharged to the WPCP. Stormwater will be discharged into the stormwater collection system.

Plant Drains-Oil/Water Separator

Miscellaneous general plant drainage will consist of area washdown, sample drainage, equipment leakage, and drainage from facility equipment areas. Water from these areas will be collected in a system of floor drains, sumps, and piping and routed to the wastewater collection system. Drains that could contain oil or grease will be routed through an oil/water separator. Water from the plant drains will be returned to the WPCP via the waste water discharge line.

Chemical Feed Area Drains

Effluent from the chemical feed area drains will be collected and treated onsite. The chemical feed area drains will collect spillage, tank overflows, effluent from maintenance operations, and liquid from area washdowns. The quantity of this effluent is difficult to predict, but it is expected to be minimal. Because of the potentially corrosive nature of these wastes, they will be collected in a corrosion-resistant piping system separate from other facility drains. The separate piping system will prevent corrosion of normal facility drains. The collected chemical drains will be routed to a neutralization facility for pH adjustment. Effluent from the neutralization facility will be routed to the wastewater collection system and returned to the WPCP via the return line.

Evaporative Cooler Blowdown

Evaporative cooler blowdown will consist of water circulated in the evaporative cooler system for a number of cycles as dictated by water supply quality and residues of the chemicals added to the circulating water. These chemicals will control scaling and biofouling of the cooling tower and corrosion of the circulating water piping and condenser tubes.. Blowdown will be discharged as required to maintain the level of dissolved solids within acceptable ranges.

Power Cycle Makeup Treatment Wastes

Wastewater from the power cycle makeup water treatment system will consist of the reject stream from the reverse osmosis (RO) units, backwash water from the multi-media microfilters (MF) upstream of the RO units, and electrodialysis (EDI) process losses.

MF is used as pretreatment prior to the RO units, to prevent downstream membrane fouling. MF/RO will reduce the concentration of dissolved solids in the plant makeup water prior to EDI system, where the process water supply is treated in ion exchange vessels.

The MF/RO backwash/reject waste water streams will contain concentrated constituents of the recycled water and residues of the chemicals added to the raw water to coagulate suspended solids prior to MF and chemicals added to the MF filtrate to eliminate free chlorine, which would damage the RO membranes, and adjust pH to control membrane scaling.

8.13.2.3.3 Hazardous Waste

Hazardous waste generated will include waste lubricating oil and spent lubrication oil filters from the combustion turbines and selective catalytic reduction (SCR) catalyst units. The catalyst units contain heavy metals that are considered hazardous. These wastes are summarized in Table 8.13-1.

TABLE 8.13-1
Hazardous Wastes Generated at the Facility

Waste	Origin	Composition	Estimated Quantity	Classification	Disposal
Lubricating oil	Gas turbine lubricating oil system	Hydrocarbons	Small amounts from leaks and spills	Hazardous	Cleaned up using sorbent and rags – disposed by certified oil recycler
Lubricating oil filters	Gas turbine lubricating oil system	Paper, metal, and hydro-carbons		Hazardous	Recycled by certified oil recycler
Laboratory analysis waste	Water treatment	Sulfuric acid	Approximately 500 gallons per year	Hazardous	Recycled by certified recycler
SCR catalyst units	SCR system	Metal and heavy metals, including vanadium	Warranty is 3 years-use tends to be 3 to 5 years	Hazardous	Recycled by SCR manufacturer or disposed in Class I landfill
Oily rags	Maintenance, wipe down of equipment, etc.	Hydrocarbons, cloth	Approximately 800 rags per year	Hazardous	Recycled by certified oil recycler

TABLE 8.13-1
Hazardous Wastes Generated at the Facility

Waste	Origin	Composition	Estimated Quantity	Classification	Disposal
Oil sorbents	Cleanup of small spills	Hydrocarbons	Approximately 200 pounds per year	Hazardous	Recycled or disposed of by certified oil recycler
Cooling tower sludge	Deposited in cooling tower basin by cooling water	Dirt from air, arsenic from water	200 lb/yr	Potentially hazardous, but usually not	Class II landfill if nonhazardous; Class I if hazardous
Chemical feed area drainage	Spillage, tank overflow, area washdown water	Water with water treatment chemicals	Minimal	May be hazardous if corrosive	Onsite neutralization, if required, then discharged to cooling tower basin

8.13.3 Waste Disposal Sites

The removal of nonhazardous solid waste (often referred to as solid waste, municipal solid waste [MSW], or garbage) is through recycling or, if not recyclable, through deposit in a Class III landfill. Nonhazardous liquid wastes will be delivered to the WPCP via the two separate return lines. Hazardous wastes, both solid and liquid, will be delivered to a permitted offsite TSD (treatment, storage, and/or disposal) facility or deposited in a permitted Class I landfill. The following subsections describe the waste disposal sites feasible for disposal of facility wastes.

8.13.3.1 Nonhazardous Waste

San Jose has a free market system for the collection of all solid waste from business enterprises. The city has granted franchises to 11 companies to collect solid waste within the city's incorporated area. Businesses can choose among the 11 collection companies for collection of their waste. BFI is typical of the 11 collection companies. Other companies include Waste Management of Santa Clara County, Green Valley Disposal, and Bay Cities Refuse Services. The landfill used by BFI is the Newby Island Sanitary Landfill in Milpitas. This landfill also contains an Material Recovery Facility, called the Recyclery, where recyclables are removed from the waste stream prior to deposit in the landfill, and a "construction cell" where construction waste is deposited. Both the Newby Island Landfill and the Recyclery are owned by BFI subsidiaries. There have been no enforcement actions against either the Newby Island Sanitary Landfill or the Recyclery.

Other landfills in the area in addition to Newby Island include Guadalupe Sanitary Landfill and Kirby Canyon Recycling and Disposal Facility. These landfills and recycling facilities are shown in Table 8.13-2. However, Newby Island has an adequate capacity to handle and dispose of solid waste generated by the facility, as shown in Table 8.13-2. Other landfills, such as the Altamont Pass Landfill (shown in Table 8.13-2), though more distant, are also possible sites for facility waste. They are possible because the cost of disposal and, therefore, the feasibility of using a disposal site are a function of both the landfill tipping fee and the distance the waste must be hauled. The lower the landfill tipping fee, the farther the waste can be hauled economically. In summary, disposal of solid nonhazardous waste will not be a constraint on site development.

TABLE 8.13-2
Solid Waste Disposal Facilities for Facility Waste

Landfill/MRF/ Transfer Station	Location	Class	Permitted Capacity	Current Operating Capacity	Remaining Capacity	Estimated Closure Date	Comments
The Recyclery at Newby Island	Milpitas	MRF (recycling)	1600 tons/day	800 tons/day	N/A	Indefinite	No enforcement actions
Newby Island Sanitary Landfill	Milpitas	III	3260 tons/day	2700 tons/day	31 years	2030	No enforcement actions
Guadalupe Sanitary Landfill	San Jose	III	3650 tons/day	1241 tons/day	26 to 39 years	2025-2038	No enforcement actions
Kirby Canyon Recycling and Disposal Facility	San Jose	III	2600 tons/day	1457 tons/day	40 years	2039	Regional Waste Board-1996-Leachate Discharge City of San Jose and BAAQMD-1993 compost odor
Altamont Pass Landfill	Near Livermore	II and III	14 million cubic yards	1.6 million cubic yards/yr	9 years	2047 to 2087	Additional 40 to 80 years capacity just permitted

MRF materials recovery facility
BAAQMD Bay Area Air Quality Management District

8.13.3.2 Hazardous Waste

Hazardous waste generated at the facility will be stored at that facility for less than 90 days. The waste will then be transported by a permitted hazardous waste transporter to a TSD facility. These facilities vary considerably in what they can do with the hazardous waste they receive. Some can only store waste while others can treat the waste to recover usable products, and still others can dispose of the waste by incineration, deep-well injection, or landfilling. (Incineration and deep-well injection are not permitted in California.)

According to the National Biennial RCRA Hazardous Waste Report (based on 1997 data), there were 250 RCRA TSD facilities in California (USEPA, 1999). Many of these facilities are companies such as oil refineries or military facilities that do not take hazardous waste from other generators. The closest commercial TSD facility is a Safety-Kleen branch office in Oakland. This facility recycles used oil and is permitted to store and transfer several hazardous wastes, including solvents, paint, and batteries. Wastes collected by the facility are shipped to other Safety-Kleen service centers for treatment or disposal. The Safety-Kleen service center in San Jose is a fully permitted TSD facility that accepts all hazardous wastes except radioactive and medical waste (Ichinaga, 2000). Safety-Kleen is now owned by Laidlaw, which has numerous TSD facilities in California.

For ultimate disposal, California has the following three hazardous waste (Class I) landfills:

- **Laidlaw (Safety Kleen) Environmental's Buttonwillow Landfill in Kern County:** This landfill is permitted at 13.25 million cubic yards and they have approximately 10.9 million cubic yards of remaining space, as of October 2000. The annual deposit rate is currently 130,000 to 150,000 cubic yards; at the current deposit rate, the landfill can accept hazardous waste for another 70 to 80 years, or until 2068 to 2078. Buttonwillow has been permitted to accept all hazardous wastes except flammables, PCB with a concentration greater than 50 ppm, medical waste, explosives, compressed gas cylinders and radioactive waste with radioactivity greater than 2,000 picocuries (Buoni, 2001).
- **Laidlaw (Safety Kleen) Environmental's Landfill in Imperial County:** This landfill is permitted at 4 million cubic yards and, to date, has approximately 2.7 million cubic yards of remaining space. The annual deposit rate is currently about 110,000 cubic yards; at the current deposit rate, the landfill can accept hazardous waste for another 23 years, or until 2021. The landfill's conditional use permit (CUP) prohibits the acceptance of some types of waste, including radioactive (except geothermal) waste, flammables, biological hazard waste (medical), PCB, dioxins, air- and water-reactive wastes, and strong oxidizers (Smith, 2001).
- **Chemical Waste Management's Kettleman Hills Landfill in Kings County:** This landfill is permitted at 17 million cubic yards. This landfill has 6 to 7 million cubic yards of remaining permitted capacity for hazardous waste (Class I). The also accept Class II and Class III wastes. The current annual deposit rate is about 1,000,000 cubic yards per year. At this rate, the landfill can accept hazardous waste for another 12 years, or until 2013. According to Chemical Waste, the landfill could permit additional capacity, if necessary. The Class I landfill is permitted for and will accept all hazardous wastes except radioactive, medical, and unexploded ordnance (UXO) (Vasquez, 2001).

There is no shortage of hazardous waste landfill capacity in California. The deposit rate has decreased by about 50 percent in the last several years due to source reduction by generators and to the transfer out of state of waste that is considered hazardous under California's Hazardous Waste Control Law (HWCL) but not under RCRA.

In addition to landfills, there are numerous offsite commercial hazardous waste treatment and recycling facilities in California. These facilities have sufficient capacity to recycle and/or treat hazardous waste generated in California that does not go to landfills. All hazardous waste will be removed and delivered to a TSD facility. Used oil will be collected by a permitted oil recycler.

8.13.4 Waste Management Methods and Mitigation

The management of waste generated by the facility will follow the hierarchical approach of source reduction, recycling, treatment, and disposal. Therefore, the first priority will be to reduce the quantity of waste generated through pollution prevention methods (e.g., high-efficiency cleaning methods). The next level of waste management will involve the reuse or recycle of wastes. For wastes that can not be recycled, treatment will be used, if possible, to make the waste non-hazardous. Finally, offsite disposal will be used to properly dispose of residual wastes that is can not be reduced, reused, recycled, or treatable.

The following subsections present methods for managing both nonhazardous and hazardous waste generated by LECEF.

8.13.4.1 Pre-Construction Phase

The nonhazardous solid waste remaining onsite will be removed by a waste removal company. The portion of the waste that is recyclable will be recovered and the remaining waste deposited in a Class III landfill. The quantity of this waste is currently unknown; however, it is estimated to be approximately 1,000 cubic yards.

Nonhazardous wastewater found on the site or produced in the site clean-up process will be collected in a drum, container, or pumped to be deposited in the San Jose sewer.

A Soil Management Plan (SMP) and Construction Worker Health and Safety Plans (HSP) shall be submitted to the Department of Toxic Substances Control, the City of San Jose Environmental Services Department, and San Jose Fire Department Hazardous Materials Division prior to start of pre-construction activities.

The Soil Management Plan will address how DDT contaminated soil will be handled during construction and development of the site. Soil handling during site grading, excavation for foundations and utilities, and landscaping will be specifically discussed. The Soil Management Plan will also detail how excavated soil that may need offsite disposal will be stockpiled and tested for disposal and soil handling activities during on-going site development.

Prior to demolition activities, asbestos and lead-based paint surveys will be completed to determine appropriate methods of demolition.

8.13.4.2 Construction Phase

Nonhazardous solid waste generated during construction will be collected in onsite dumpsters and picked up periodically by one of the 11 franchised collection companies, such as BFI. The waste will be taken to one of several nearby MRFs, such as BFI's Recyclery, where recyclables will be removed; the residue will be deposited in one of several nearby landfills, such as BFI's Newby Island Landfill. Wastewater generated will include sanitary waste and may include equipment washwater and stormwater runoff. Sanitary waste will be collected in portable, self-contained toilets. Equipment washwater will be contained at designated wash areas and disposed of offsite. Stormwater runoff will be managed in accordance with a stormwater management permit, which will be obtained prior to the start of construction. The generation of nonhazardous wastewater will be minimized through water conservation and water-reuse measures.

Most of the hazardous waste generated during construction will consist of liquid waste, such as flushing and cleaning fluids, and solvents. Some solid waste in the form of welding materials and dried paint may also be generated. The quantity of welding, solvent, and paint waste will be minimal. The construction contractor will be considered the generator of hazardous construction waste and will be responsible for the proper handling of hazardous waste in compliance with all applicable federal, state, and local laws and regulations, including licensing, training of personnel, accumulation limits and times, and reporting and record keeping. The hazardous waste will be collected in hazardous waste accumulation containers near the points of generation, moved daily to the contractor's 90-day hazardous waste storage area located at the plant construction laydown area, and then, prior to the expiration of the regulatory 90-day storage period, the waste will be manifested and transported to an authorized hazardous waste management facility by a permitted hazardous waste transporter.

8.13.4.3 Operation Phase

The primary waste generated during the operation phase will be nonhazardous wastewater from plant operation. Nonhazardous solid waste will also be generated, as well as varying quantities of liquid and solid hazardous waste. Handling and mitigation of these wastes is described in the following subsections.

8.13.4.3.1 Nonhazardous Wastes

The wastewater from plant operation will be collected and returned to the WPCP. Although a large percent of the water used to operate the facility will be lost through evaporation from the cooling tower, the remaining effluent water from the cooling towers is returned to the WPCP.

The sanitary sewer system will collect wastewater from facility sinks and toilets. The wastewater will be treated in an onsite treatment facility. The waste produced will be typical of the type and quantity generated by facility workers. The waste will be discharged to the WPCP.

Nonhazardous solid waste or refuse will be collected by one of 11 collection companies approved or franchised by San Jose. Although most of these collection companies remove recyclable material prior to depositing non-recyclable waste in a landfill, recycling will be implemented throughout the facility to minimize the quantity of nonhazardous waste that must be disposed of in a landfill.

8.13.4.3.2 Hazardous Wastes

To avoid the potential effects on human health and the environment from the handling and disposal of hazardous wastes, procedures will be developed to ensure proper labeling, storage, packaging, record keeping, and disposal of all hazardous wastes. The following general procedures will be employed.

- The facility will be classified as a hazardous waste generator. Prior to facility start-up, application will be made to California Environmental Protection Agency (CalEPA) for a USEPA identification number.
- Hazardous wastes will not be stored onsite for more than 90 days and will be accumulated according to CCR Title 22.
- Hazardous wastes will be stored in appropriately segregated storage areas surrounded by berms to contain leaks and spills. The bermed areas will be sized to hold the full

contents of the largest single container and, if not roofed, sized for an additional 20 percent to allow for rainfall. These areas will be inspected weekly.

- Hazardous wastes will be collected by a licensed hazardous waste hauler using a hazardous waste manifest. Wastes will only be shipped to an authorized hazardous waste management facility. Biannual hazardous waste generator reports will be prepared and submitted to the Department of Toxic Substances Control (DTSC). Copies of manifests, reports, waste analyses, and other documents will be kept onsite and remain accessible for inspection for at least 3 years.
- Employees will be trained in hazardous waste procedures, spill contingencies, and waste minimization.
- Procedures will be developed to reduce the quantity of hazardous waste generated. Nonhazardous materials will be used instead of hazardous materials whenever possible, and wastes will be recycled whenever possible.

Specifically, hazardous waste handling will include the following. Handling of hazardous wastes in this way will minimize the quantity of waste deposited to landfills:

- Waste lubricating oil will be recovered and recycled by a waste-oil recycling contractor.
- Spent oil filters and oily rags will be recycled, if possible, or disposed of in a Class I landfill.
- Spent SCR catalysts will be recycled by the supplier, if possible, or disposed of in a Class I landfill if recycling is infeasible.
- Chemical cleaning wastes will consist of alkaline and acid cleaning solutions used during pre-operational chemical cleaning. These wastes, which are subject to high metal concentrations, will be stored temporarily onsite in portable tanks and disposed of offsite, in accordance with applicable regulatory requirements. Disposal may consist of offsite treatment, recovery of metals, and/or landfilling

8.13.4.4 Facility Closure

When the facility is closed, both nonhazardous and hazardous wastes must be handled properly. Closure can be temporary or permanent. Temporary closure would be for a period of time greater than the time required for normal maintenance, including overhaul or replacement of the combustion turbines. Causes for temporary closure could be a disruption in the supply of natural gas, flooding of the site, or damage to the plant from earthquake, fire, storm, or other natural causes. Permanent closure would consist of a cessation in operations with no intent to restart operations and could be due to the age of the plant, damage to the plant beyond repair, economic conditions, or other unforeseen reasons. Handling of wastes for these two types of closure are discussed below.

8.13.4.4.1 Temporary Closure

For a temporary closure, where there is no release of hazardous materials, facility security will be deployed on a 24-hour basis, and the CEC will be notified. Depending on the length of shutdown necessary, a contingency plan for the temporary cessation of operations will be implemented. This plan will be prepared prior to facility startup. The plan will be developed to ensure conformance with all applicable LORS and the protection of public health and safety and the environment. The plan, depending on the expected duration of the shutdown, may include the draining of all chemicals from storage tanks and other equipment and the safe shutdown of all equipment. All wastes will be disposed of according to applicable LORS, as discussed in Section 8.13.7.

Where the temporary closure is in response to facility damage, or where there is a release or threatened release of hazardous waste (or materials) into the environment, procedures will be followed as set forth in an RMP. The RMP is described in Section 8.12.6.4. Procedures include methods to control releases, notification of applicable authorities and the public, emergency response, and training for facility personnel in responding to and controlling releases of hazardous materials and hazardous waste. Once the immediate problem of hazardous waste and materials release is contained and cleaned up, temporary closure will proceed as described for a closure where there is no release of hazardous materials or waste.

8.13.4.3.2 Permanent Closure

The planned life of the generation facility is 30 years, though operation could be longer. Whenever the facility is permanently closed, the handling of nonhazardous and hazardous waste and hazardous materials will be part of a general closure plan (see Section 4) that will attempt to maximize the recycling of all facility components. Unused chemicals will be sold back to the suppliers or other purchasers or users. All equipment containing chemicals will be drained and shut down to protect public health and safety and the environment. All nonhazardous wastes will be collected and disposed of in appropriate landfills or waste collection facilities. All hazardous wastes will be disposed of according to applicable LORS (San Jose requires a Closure Permit). The site will be secured 24 hours per day during decommissioning activities.

8.13.5 Cumulative Impacts

The facility will generate nonhazardous solid waste that will add to the total waste generated in Santa Clara County and in California. However, there is adequate recycling and landfill capacity in Santa Clara County to recycle and dispose of the waste for the next 30 to 40 years. This capacity is described in Section 8.13.3.1. Therefore, the impact of the project on solid waste recycling and disposal capability is not significant.

Hazardous waste generated will consist of waste oils and SCR catalysts which will be recycled. Hazardous waste treatment and disposal capacity in California is more than adequate. Therefore, the effect of the facility on hazardous waste recycling, treatment, and disposal capability is not significant.

8.13.6 Waste Monitoring

Because the environmental impacts caused by construction and operation of the facility are expected to be minimal, extensive monitoring programs will not be required. Generated waste, both nonhazardous and hazardous, will be monitored during project construction and operation in accordance with the monitoring and reporting requirements mandated by the regulatory permits to be obtained for construction and operation.

8.13.7 Laws, Ordinances, Regulations, and Standards

The handling of nonhazardous and hazardous waste at the facility will be governed by federal, state, and local laws. Applicable laws and regulations address the proper handling, storage, and disposal of waste to protect the environment from contamination and facility workers and the surrounding community from exposure to nonhazardous and hazardous waste. The LORS applicable to the handling of waste at the facility are summarized in Table 8.13-3.

TABLE 8.13-3
Applicable Laws, Ordinances, Regulations, and Standards

LORS	Applicability	Conformance (Section No.)
Federal		
RCRA Subtitle D	Controls solid waste collectors, recyclers, and depositors	Solid waste will be collected and disposed of by a collection company in conformance with Subtitle D. Sections 8.13.3.1, 8.13.4, and 8.13.7.1.
Subtitle C	Controls storage, treatment, and disposal of hazardous waste	Hazardous waste will be handled by contractors in conformance with Subtitle C. Section 8.13.4.
California		
California Integrated Waste Management Act (CIWMA)	Controls solid waste collectors, recyclers, and depositors	Solid waste will be collected and disposed of by a collection company in conformance with the CIWMA. Sections 8.13.3.1, 8.13.4.1 and 8.13.4.
Porter-Cologne Water Quality Control Act	Controls discharge of wastewater to the surface and ground waters of California-applies to wastewater discharged from cooling tower basins	Discharge will be in accordance with POTW pretreatment standards, which conform to the Porter-Cologne Act. Sections 8.13.2, 8.13.6 and Section 8.14.

8.13.7.1 Federal

Wastewater is regulated by USEPA under the CWA. The WPCP, which receives LECEF wastewater discharge has an NPDES permit regulating its activities.

The federal statute that controls both nonhazardous and hazardous waste is RCRA, 42 USC Sections 6901 et seq., and its implementing regulations found at 40 CFR 260 et seq. Subtitle D makes the regulation of nonhazardous waste the responsibility of the states; federal involvement is limited to establishing minimum criteria that prescribe the best practicable controls and monitoring requirements for solid waste disposal facilities. Subtitle C controls the generation, transportation, treatment, storage, and disposal of hazardous waste through a comprehensive “cradle to grave” system of hazardous waste management techniques and requirements. It applies to all states and to all generators of hazardous waste (above certain levels of waste produced). The facility will comply with this law in its generation, storage, transport, and disposal of any hazardous waste generated at the facility. The USEPA is has delegated its authority for implementing the law to the State of California.

8.13.7.2 State

Nonhazardous solid waste is regulated by the CIWMA of 1989, found in PRC Sections 40000 et seq. This law provides an integrated statewide system of solid waste management by coordinating state and local efforts in source reduction, recycling, and land disposal safety. Counties are required to submit Integrated Waste Management Plans to the state. This law directly affects Santa Clara County and the solid waste hauler and disposer that will collect the facility's solid waste. It also requires that hazardous wastes are not to be disposed with solid waste.

Wastewater is regulated by the State and Regional Water Quality Control Boards under the Porter-Cologne Water Quality Control Act. Wastewater will be returned to the WPCP (see Sections 7 and 8.14).

RCRA allows the states to develop their own programs to regulate hazardous waste. The programs developed must be at least as stringent as RCRA. California has developed its own program by passage of the HWCL. This statute is found in Health and Safety Code Sections 25100 et seq. Administration and enforcement of the HWCL was originally by the former Department of Health Services (DHS); DHS was transferred to the CalEPA and became the DTSC. Some of the elements of implementation of the HWCL were delegated to local health departments by DHS via a Memorandum of Understanding. The DTSC continues to recognize these local programs. The HWCL performs essentially the same regulatory functions as RCRA and is the law that will actually regulate hazardous waste at the facility since California has elected to develop its own program. The HWCL, however, includes hazardous wastes that are not classified as hazardous waste under RCRA. Although the hazardous waste generated at the LECEF facility during both construction and operation will be removed (e.g., SCR catalysts, and used oil), the HWCL will require the applicant to adhere to storage, record keeping, reporting, and training requirements for these wastes.

8.13.7.3 Local

San Jose will have the responsibility for administering and enforcing the CIWMA for solid, nonhazardous waste for the site since it will be located in the City of San Jose.

For hazardous waste, local regulation consists primarily of the administration and enforcement of the HWCL. The Santa Clara County Certified Unified Permitting Agency (CUPA) is the local agency that will regulate hazardous waste. For emergency spills, the Santa Clara County Hazardous Materials Response Team, or the San Jose Hazardous Incidence Team (HIT) will be responsible for containment and cleanup.

8.13.7.4 Codes

The design, engineering, and construction of hazardous waste storage and handling systems will be in accordance with all applicable codes and standards, including:

- The Uniform Fire Code
- The Uniform Building Code
- The Uniform Plumbing Code

8.13.8 Involved Agencies

Several agencies, including the U.S. EPA at the federal level and the CalEPA at the state level, regulate nonhazardous and hazardous waste and will be involved in the regulation of facility waste generation. The hazardous waste laws, however, are administered and enforced primarily through a local agency or agencies. For this facility, the agency will be the Santa Clara County CUPA. The agencies and persons to contact for each type of waste are shown in Table 8.13-4.

TABLE 8.13-4
Agency Contacts

Waste Type	Agency	Contact	Title	Telephone
Nonhazardous				
Solid Waste and Recycling	Santa Clara County 1735 North First St., San Jose, CA 95112	Margaret Rand	Program Manager, Integrated Waste Management Program	408/441-1198
Solid Waste and Recycling	City of San Jose, Environmental Services Department 777 N. First St., San Jose, CA 95112 Suite 300	Ellen Ryan	Program Manager, Solid Waste	408/277-5533
Hazardous				
Hazardous	Santa Clara County 1735 North First St., San Jose, CA 95112	Gordon McPhaill	Manager of Hazardous Materials	408/299-6930
Hazardous	Santa Clara County 1735 North First St., San Jose, CA 95112	Nicole Pullman	Lead Hazardous Materials/Waste Specialist	408/299-8850

8.13.9 Permits Required and Permit Schedule

The following permits are required by the City of San Jose and by Santa Clara County:

San Jose

No permits required.

Santa Clara County

Hazardous Waste Generator Permit – Required for any business that generates hazardous waste. The county is the lead agency in CUPA that handles hazardous waste enforcement for all CUPA members, including City of San Jose.

8.13.10 References

Brady, C. 2001. Telephone conversation with Chris Brady, Northern California Sales Manager for Waste Management, Altamont Pass Landfill. July 3.

Buoni, M. 2001. Telephone conversation with Mariana Buoni, Facility Manager Safety-Kleen's Buttonwillow Landfill. July 2.

Pullman, N. 2001. Telephone conversation with Nicole Pullman, Lead Hazardous Materials Specialist with Santa Clara County. July 2.

Rand, M. 2001. Telephone conversation with Margaret Rand, Program Manager – Integrated Waste Management Program with Santa Clara County. July 3.

Smith, A. 2001. Telephone conversation with Alan Smith, Safety-Kleen Westmorland Landfill in Imperial County. July 3.

Vasquez, E. 2001. Telephone conversation with Ed Vasquez, Chemical Waste Management's Kettleman Hills Facility. July 2.

California Integrated Waste Management Board. 2000. Inventory of Solid Waste Facilities Violating State Minimum Standards. September.

California Integrated Waste Management Board. 2000. California Waste Facilities, Sites, & Operations Database. September.

USEPA (U.S. Environmental Protection Agency). 1999. National Biennial RCRA Hazardous Waste Report (based on 1997 Data). September.

8.14 Water Resources

This section evaluates the effect of the project on water resources in the area. The use of recycled water for the project is addressed in Section 7. This section is divided into the general areas of:

- Current hydrologic conditions (8.14.1 – 8.14.3)
- Effects and mitigation (8.14.4 – 8.14.5)
- Monitoring and compliance (8.14.6 – 8.14.11)

Water resources potentially affected by the proposed project include water supply, water quality, and flood hazards. The following water resources impacts were investigated:

- Water quality effects of discharged water to the City of San Jose sewer system and the Water Pollution Control Plant (WPCP)
- Stormwater impacts
- Flooding impacts

The primary source of information for this section is the U.S. Dataport PDZ Project DEIR and FEIR, which evaluated the impacts to water resources from the entire U.S. Dataport planned development. LECEF, proposed as mitigation to the USD Project modifies only a portion of the USD Project area, therefore, this section describes only the affected environment for the project site. Impacts to water resources identified in the DEIR and FEIR are restated herein with specific clarification as to the impact from the project.

8.14.1 Hydrologic Setting

This section describes the water resources features in the immediate vicinity of the project site.

8.14.1.1 Groundwater

The project area is located within the Santa Clara groundwater basin (Figure 8.14-1). Regional groundwater flow is to the north and west, towards San Francisco Bay with local groundwater flowing northeast towards Coyote Creek. The project site is characterized by a relatively high ground water table. During testing, groundwater was encountered between six and one-half to 19 feet below ground surface (bgs), and can be expected at depths on the order of five to seven feet bgs (City of San Jose, 2000).

Based on available subsurface data, the project site is underlain by stiff clays, loose clayey silt and clayey sand to depths of five to 20 feet (City of San Jose, 2000). Below these materials are interbedded strata of very stiff silty clay and loose to dense silty sand and sandy gravel to at least 30 feet, the maximum depth explored on-site. These sediments have relatively poor groundwater yield and quality, and are subject to saltwater intrusion. Water from this shallow zone aquifer is not used for drinking. The shallow zone is separated from deeper aquifers by a blue clay aquitard, which extends to approximately 150 feet (Figure 8.14-2). Below this aquitard, groundwater is used as a supply throughout the Santa Clara groundwater basin (Aspen Environmental, 2000).

Former extensive ground water pumping for agricultural and urban uses resulted historically in an area-wide subsidence. Between 1934 and 1967, subsidence in Alviso may have been as much as six feet. The low ground water levels which caused the subsidence were generally corrected in the early 1960s. The U.S. Army Corps of Engineers and the Santa Clara Valley Water District (SCVWD) do not expect significant subsidence to be likely in the future. Unpublished survey data from the SCVWD has shown subsidence values of approximately 0.1 feet or less in 20 years, since 1968. Therefore, future subsidence due to groundwater withdrawal is not expected at the site.

There are four wells on the c*Power parcel, although none are located on the LECEF site. The depth and construction design of these wells are unknown, and they were not identified in a 1997 Well Search Report developed by the SCVWD. During a recent site inspection, two water storage tanks were noted with interconnecting piping, which may have been actively pumping groundwater for irrigation uses. No groundwater wells were located during the site visit. Therefore, although the current owners of the property may be using groundwater for their needs, this project will not use nor impact groundwater. Figure 8.14-2 shows a cross-section view of the Santa Clara groundwater Basin.

8.14.1.2 Surface Water

The project site is located within the alluvial plain of the Santa Clara Valley (Figure 8.14-1). There are no waterways present within the boundaries of the project site, although Coyote Creek and the Coyote Creek by-pass channel are located approximately 700 to 1,000 feet to the east of the LECEF site. The edge of the riparian corridor bordering the natural channel of Coyote Creek is approximately 700 feet from the site.

Coyote Creek is the largest drainage basin in the Santa Clara Valley, collecting runoff from a 320 square mile watershed spanning portions of the Diablo Range, Santa Cruz Mountains, and Santa Clara Valley. In its 80-mile length, Coyote Creek passes through two flood control reservoirs at the western base of the Diablo Range then flows northwest through the City of San Jose and ultimately empties into San Francisco Bay west of the project site. The stream channel has been modified for flood control purposes in limited reaches through the urbanized areas of the Santa Clara Valley floor. Recently, a new overflow channel (Coyote Creek Flood Bypass) was built to divert floodwaters along the south side of Newby Island Landfill. Additionally, an enlarged and enhanced levee system has recently been constructed along the lower portions of Coyote Creek to improve flood conveyance capacity.

Water quality in Coyote Creek is affected by varying salinity from fresh to brackish depending upon the balance between upland freshwater sources and the more saline waters of San Francisco Bay, and point and non-point pollution sources originating from industrial, agricultural, and commercial activities throughout the Santa Clara Valley. The Regional Water Quality Control Board (RWQCB) regulates point discharges through the National Pollution Discharge Elimination System (NPDES) by granting permits regulating the amount of pollutant discharges allowed to surface water bodies of the State. The NPDES permits are designed to protect the state-defined beneficial uses of the water body, which for Coyote Creek are given as cold freshwater habitat, fish migration, rare and endangered species preservation, fish spawning habitat, warmwater fish habitat, wildlife habitat, non-contact recreation, and for potential contact recreation (SFRWQCB, 1995).

Surface water will not be used as a part of this project. Stormwater discharges will be subject to the state stormwater NPDES permitting program and the City of San Jose stormwater retention guidelines that will serve to protect the creek from water quality degradation (see Section 8.14.4.2).

8.14.1.3 Flooding Potential

The Coyote Creek Flood Control Project was completed by the SCVWD and the U.S. Army Corps of Engineers in 1997 for the reach from Montague Expressway north to San Francisco Bay. The channel has a design capacity of 15,000 cubic feet per second (cfs) to contain the 100-year flood. A flood control levee is located along the eastern boundary of the site. The Coyote Creek by-pass channel borders the levee along the northern two-thirds of the site's eastern boundary. At the southern end of the site, the Coyote Creek riparian corridor borders the in-board side of the levee.

Although the site was originally located within the 100-year flood plain, based upon a Letter of Map Revision by the Federal Emergency Management Agency (July 10, 1997), the project site is no longer within the 100-year flood plain (See Appendix 8.14A). However, the only published FEMA maps available were developed in 1996, therefore, they do not reflect this change. The approximate location of the 100-year flood plain based on a Flood Insurance Rate Map obtained from the City of San Jose Department of Public Works (Development Services Division) and from information obtained from the SCVWD is presented in Figure 8.14-3.

8.14.2 Recycled Water Use and Disposal

This section characterizes the sources of water needed for potable use and power generation for the project, and the discharge of wastewater routed to the City of San Jose sewer, and ultimately back to the SJ/SC WPCP for reuse by the South Bay Water Recycling (SBWR) program and discharge to San Francisco Bay.

8.14.2.1 Recycled Water Sources

As described in Section 7, the project will use recycled water for cooling water, for NO_x suppression injection, and power augmentation. The average and peak influent needs are 0.50 million gallons per day (mgd) and 0.82 mgd. This water will be supplied by the SJ/SC WPCP through the South Bay Water Recycling (SBWR) program. Details of the water supply pipeline to convey recycled water to the site are included in Section 7.

Potable water needs are expected to be low. The existing water supply network is limited near the site, thus potable water will be provided to the site in water trucks operated by local drinking water suppliers.

8.14.2.2 Recycled Water Quality

Table 8.14-1 summarizes the average water quality of project's process water source, the SBWR program's recycled water, from 1994 through 1999. Water quality is considered excellent, due to the low metals, ammonia, and TSS concentrations. The incoming water quality (specifically the total dissolved solids content) relates directly to the nature of the blowdown discharged from the cooling towers. The impact of this water quality is discussed in Section 8.14.4.

TABLE 8.14-1
Quality of the Planned LECEF Water Source

		Monthly Results[1]		
Constituent	**Units**	**Average**	**Max**	**Min**
General Parameters				
Alkalinity	mg CaCO3/L	159	219	96
Ammonia	mg NH3-N/L	1.1	1.8	0.5
Bicarbonate	mg HCO3/L	148	214	82
BOD (5-day)	mg/L	3.0	6.0	2.0
Conductivity	µS/cm	1294	1465	906
Hardness	mg CaCO3/L	252	329	206
Nitrate	mg NO3-N/L	11.9	22.9	4.8
Permeability SAR	-	4.57	4.75	4.06
pH	std units	7.2	7.4	6.8
Settleable Solids	mg/L	0.00	0.00	0.00
Temperature	°F	70.7	79.5	62.6
Total Dissolved Solids	mg/L	777	869	670
Total Fats, Oils & Grease	mg/L	1.8	4.0	1.4
Total Suspended Solids	mg/L	1.3	6.7	0.6
Turbidity	NTU	1.1	3.0	1.0
Chemical Parameters				
Arsenic	mg/L	0.0013	0.0100	0.0005
Beryllium[2]	mg/L	0.001	NA	NA
Boron	mg/L	0.50	0.70	0.40
Cadmium	mg/L	0.0009	0.0050	0.0005
Calcium	mg/L	50.3	64.0	43.1
Chloride	mg/L	173.0	199.0	129.0
Chromium	mg/L	0.0008	0.0020	0.0005
Copper	mg/L	0.0041	0.0067	0.0019
Lead	mg/L	0.0011	0.0020	0.0010
Magnesium	mg/L	29.5	41.1	25.5
Mercury	mg/L	0.000074	0.000200	0.000001
Nickel	mg/L	0.0074	0.0130	0.0010

TABLE 8.14-1
Quality of the Planned LECEF Water Source

		Monthly Results[1]		
Constituent	**Units**	**Average**	**Max**	**Min**
Potassium	mg/L	14.6	21.3	9.9
Selenium[2]	mg/L	0.001	NA	NA
Silicon	mg/L	10.3	11.7	7.5
Silver	mg/L	0.001	0.0010	0.0010
Sodium	mg/L	165.0	198.0	136.0
Sulfate	mg/L	120	139	92
Zinc	mg/L	0.049	0.075	0.029
Other				
Cyanide[3]	mg/L	< 0.005	NA	NA
Phenols[3]	mg/L	< 0.005	NA	NA
Dissolved Oxygen	mg/L	7.3	8.2	5.4
Orthophosphate	mg/L	4.9	13.0	0.3
TOC4	mg/L	6.7	15.0	7.0

1) SBWR Water Quality Data, 1994 – 1999
2) SBWR Water Quality Data, March 1994 - August 1998
3) SJ/SC WPCP Self-Monitoring Report, February 2001
4) SBWR Water Quality Data, 1999
SAR = Sodium Adsorption Ratio
NTU = Nepholometric Turbidity Units
NA = Data not available
TOC = Total Organic Carbon

8.14.2.3 Wastewater Disposal

As discussed in Section 7, the industrial wastewater discharged from the project will be conveyed to the City of San Jose sewer system for treatment at the WPCP. The WPCP is located approximately 0.5 mile to the northwest of the site and provides tertiary treatment of wastewater for several surrounding cities and sanitation districts. The Cities of San Jose and Santa Clara jointly own the facility, but the City of San Jose operates and maintains the WPCP. The WPCP is an advanced tertiary treatment facility which includes nitrification, filtration, and chlorine disinfection.

The project will discharge 297,000 gallons per day during peak operation and 176,000 gallons per day during average operating conditions. This discharge consists the backwash from the microfiltration (MF) system, cooling tower blowdown, reverse osmosis (RO) concentrate, electrodialysis (EDI) waste, and process drains. The largest component of the industrial waste is the cooling tower blowdown, which is discharged after three cycles of concentration, to prevent to build up of total dissolved solids and other impurities. The MF backwash, RO concentrate, and EDI waste are generated as byproducts of the process water treatment necessary for NO_x suppression injection and power augmentation

(See Section 7). Process drains include area washdown, sample drainage, equipment leakage, and drainage from facility equipment areas. All industrial waste streams will be monitored, as appropriate, and combined in the process wastewater sump before discharged to the sanitary sewer system. Sanitary wastes will constitute an additional discharge of 2 gpm, and will be combined with the industrial waste stream.

The quality of each waste stream was estimated based on average influent water quality from the SBWR and the flow rates required for peak operation of the project (during 108° F ambient temperature). Table 8.14-2 shows the estimated wastewater contribution from the wastewater stream components. The maximum allowable discharge concentrations presented in the table are the local limits for interfering substances enforced by the WPCP through its Industrial Waste Discharge Program.

The water quality permits for the WPCP were developed by the San Francisco Regional Water Quality Control Board (SFRWQCB) specifically to protect South Bay resources. In the cases of copper and nickel the site-specific permit limits were developed through special studies of WPCP effluent effects. The projected water quality of the industrial wastewater from the project (as a Type 2 Discharger—a large discharger that does not use copper or nickel as part of its operational process) meets all Maximum Allowable Concentration limits, and meets the special limits set for nickel (0.5 mg/L average annual and 1.1 mg/L average daily concentrations) and for copper (0.4 mg/L average annual and 1.0 mg/L average daily concentrations). The federal pretreatment standards for cooling tower blowdown from new sources (40 CFR 423.17) is also shown in the table. Compliance with these federal standards is assured by starting with a clean water supply, constructing cooling towers with wetted surfaces that do not leach priority pollutants, purchasing water treatment chemicals that do not contain priority pollutants, and carefully controlling chemical dosages to the minimum required to achieve the desired result. The water quality for discharge and for reuse by the SBWR is assured through permitting the industrial waste discharge and compliance with the Industrial Waste Program standards.

Portable toilets will be supplied by a licensed contractor for collection and disposal of sanitary wastes during the construction period. The accumulated waste will be periodically removed by truck for disposal at the WPCP. During normal operations, as mentioned above, sanitary wastewater will be conveyed to the City of San Jose sewer system.

8.14.2.4 Water Demand

The project will require 0.50 million gallons per day (mgd) (347 gallons per minute), or 560 acre-ft/year during average water supply demand conditions (assumed at 60°F ambient conditions) and 0.82 mgd (566 gallons per minute), or 913 acre-ft/year during peak water supply demand conditions (assumed at 108°F ambient conditions). Because peak demand conditions exist only as long as ambient air temperatures of 108 ºF persist, this peak condition is purely theoretical.

During construction of the project, water will be needed primarily for dust suppression. Due to the limited duration of construction activities, and the relatively small

TABLE 8.14-2
Estimated Wastewater Concentrations

		Input to Wastewater Stream1						Maximum
		Filter Backwash	CT Blowdown3	RO Concentrate	EDI Waste	Process Drains	Combined Waste	Allowable Concentration6
Flow (gpm)		27	97	56	22	5	207	
Constituent	**Units**							
Cations								
Calcium	mg/L	45.8	137	232	2.02	45.8	134	
Magnesium	mg/L	29.1	87.2	147	2.02	29.1	85.2	
Manganese	mg/L	0.20	0.60	1.01	0.02	0.20	0.59	35.0
Potassium	mg/L	14.8	44.2	74.3	2.02	14.8	43.3	
Sodium	mg/L	156	468	786	20.94	156	458	
Anions								
Bicarbonate	mg/L	182	546	916	25.23	182	534	
Chloride	mg/L	194	583	979	25.23	194	570	
Phosphate	mg/L	4.86	14.6	24.7	0.00	4.86	14.3	
Sulfate	mg/L	126	377	637	8.07	126	369	
Metals								
Antimony	mg/L	0.001	0.003	0.005	0.0001	0.001	0.003	5.0
Arsenic	mg/L	0.001	0.003	0.005	0.0001	0.001	0.003	1.0
Beryllium	mg/L	0.001	0.003	0.005	0.000	0.001	0.003	0.75
Cadmium	mg/L	0.0005	0.0015	0.0025	0.00006	0.0005	0.0015	0.7
Chromium	mg/L	0.001	0.002	0.004	0.0001	0.001	0.002	1.0 (0.2)[4]
Copper	mg/L	0.004	0.012	0.020	0.0005	0.004	0.012	0.4 / 1.0 [5]
Lead	mg/L	0.001	0.003	0.005	0.0001	0.001	0.003	0.4

TABLE 8.14-2
Estimated Wastewater Concentrations

		Input to Wastewater Stream1						Maximum
		Filter Backwash	CT Blowdown3	RO Concentrate	EDI Waste	Process Drains	Combined Waste	Allowable Concentration6
Mercury	mg/L	0.00003	0.00009	0.00015	0.000004	0.00003	0.00009	0.010
Nickel	mg/L	0.0077	0.0231	0.0389	0.0009	0.0077	0.0226	0.5 / 1.1 [5]
Selenium	mg/L	0.002	0.006	0.010	0.000	0.002	0.006	2.0
Silver	mg/L	0.001	0.003	0.005	0.0001	0.001	0.003	0.7
Zinc	mg/L	0.064	0.19	0.32	0.008	0.064	0.19	2.6 (1.0)[4]
Other								
Cyanide	mg/L	0.005	0.015	0.021	0.010	0.005	0.015	0.5
Phenols	mg/L	0.005	0.015	0.021	0.010	0.005	0.015	
SiO_2 [2]	mg/L	10.7	32.2	54.2	1.01	10.7	31.5	
TSS	mg/L	39.9	1.59	1.6	0.00	0.32	6.39	
TDS	mg/L	761	2,282	3,836	89.3	816	2,232	
pH	std units	7.73	7 - 8.5	6 - 7.5	6 - 7.5	6.5 - 8	6 - 9	

1) Estimates based upon incoming water quality data provided by the SBWR and preliminary plant water balance diagram.
2) All silicon assumed to be in the form of SiO_2.
3) Chemicals used in cooling tower treatment will not contain priority pollutants listed in 40 CFR 423.17.
4) 40 CFR 423.17 cooling tower blowdown pretreatment standards for new sources given in parenthesis.
5) SJ/SC WPCP Type 2 Discharger special limits (average annual / average daily concentrations).
6) Maximum Allowable concentration from SJ/SC WPCP wastewater discharge application unless otherwise noted

water requirements (100 gpm peak and 25,000 gallons per day average) of the construction phase of the project, no significant adverse impacts to water supply are expected to result.

8.14.2.5 Recycled Water Flow and Treatment

SBWR water meets CCR Title 22 standards for unrestricted use. Therefore, the recycled water is suitable for use as cooling tower makeup without extensive treatment, however, higher quality water is required to prevent damage to the turbine materials when used for NO_x control. The process flow diagram is presented in Figure 7-1 and details of the water treatment required for NO_x suppression injection and power augmentation are discussed in Section 7.

8.14.3 Precipitation, Stormwater Runoff, and Drainage

Most of the precipitation in the San Jose area falls in the November through April period. This is also characteristic of the project site. Monthly average rainfall near the project site is presented in Table 8.14-3. The total annual average rainfall is 14.42 inches.

TABLE 8.14-3
Average Monthly Rainfall near the Proposed Project Site (San Jose), 1950 – 1998

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Rainfall (in.)	2.78	2.16	2.58	1.17	0.26	0.05	0.06	0.12	0.24	0.9	2.11	1.99

8.14.3.1 Stormwater Runoff Prior to Construction

Most of the project site currently drains overland to ditches along Zanker Road. These ditches discharge to the WPCP drainage culverts near the sludge ponds, which ultimately discharge to Artesian Slough north of Los Esteros Road. Flows from Artesian Slough discharge to Coyote Creek near the Alameda County-Santa Clara County line. A culvert and flap gate in the easternmost portion of the site is elevated above the existing ground surface. If flooded, the site could drain to the adjacent Coyote Creek by-pass channel via the existing 24" culvert and outfall with a flap gate.

8.14.3.1 Stormwater Runoff After Construction

The proposed project will collect stormwater runoff from the project site through a system of stormwater retention areas around the perimeter of the site, and convey flows to a pump station at the northeastern corner of the site (Figure 8.14-4). The stormwater retention areas will be designed such that one set of ditches will direct the flow from the southeast corner of the project site to the southwest corner, up to the northwest corner, where it will enter into the storm drain system, a pipeline approximately 24” in size. Along the eastern boundary of the site, another ditch will convey flow to the northeastern corner of the system to a concrete lined sump with storm water pumps. The combined flows will then be pumped to the Coyote Creek by-pass channel via a 750-foot pipeline to an existing 24- inch culvert and flap gate that extends through the by-pass channel levee. An access agreement is being negotiated for development of the storm drain pipeline across private property. Figure 8.14-4 shows the project grading and drainage plan.

The stormwater retention areas will be excavated to varying slopes and depths, such that groundwater will not be encountered during excavation. A raised sill or weir will extend across the entrance of the sump to trap sediment. The project stormwater retention areas and storm water pumps will be designed to accommodate 10-year storm events. Runoff during events with recurrence intervals greater than 10 years would be stored in the drainage system and parking areas. Wash down and drainage from facility equipment areas will be collected in a separate system of floor drains, sumps, and piping routed to the oil/water separator and ultimately discharged with the facility's waste water.

As stated in the DEIR/FEIR for the U.S. Dataport Planned Development, currently runoff from a 100-year storm event would result in flows of approximately 100 cfs from a 174 acre site. These flows would drain off-site to the ditches to the northwest along Zanker Road. Once the U.S. Dataport project site is fully developed, runoff during a 100-year storm was estimated to increase to approximately 170 cfs. Of this amount, the DEIR/FEIR projected that approximately 105 cfs would be collected and discharged to the Coyote Creek by-pass channel via the pump station. As the project site is significantly smaller than the entire site considered in the DEIR/FEIR, the amount of runoff expected to be pumped to Coyote Creek from a 100-year storm may range from approximately 9 to 15 cfs. .

The DEIR/FEIR estimated that the project storm discharge of 105 cfs from the entire site to the Coyote Creek by-pass channel represents 0.7 percent of the predicted 100-year flow in Coyote Creek. This increase in discharge, close to San Francisco Bay, would not result in a detectable or significant increase in water level and would not result in flooding upstream or downstream during a 100-year storm event. Because the flows from the LECEF project are significantly less than those predicted for the U.S. Dataport project, the impacts to water levels and flooding would be minimal, estimated at 0.1 percent or less.

8.14.4 Effects on Water Resources

The project's direct effects on groundwater, surface water, the use of recycled water, and the discharge of plant sewage are discussed below. No groundwater or surface water will be used as project water supplies.

8.14.4.1 Groundwater

Groundwater will not be used for the project, however, groundwater may be encountered during deeper excavations and construction of utility trenches on the site. Saturated conditions can make excavations unstable, and high groundwater levels could also impact below grade structures.

While high groundwater levels were noted on the site, the potential for impacts resulting from groundwater conditions on the site can be avoided by utilizing standard engineering and construction techniques.

8.14.4.2 Surface Water

According to the DEIR/FEIR, development of the U.S. Dataport project would increase the potential for stormwater runoff to carry a variety of pollutants into Coyote Creek, and during some storm events, Artesian Slough. Street and parking lot runoff often carries grease, oil, and trace amounts of heavy metals into natural drainages. Runoff from landscaping can carry pesticides, herbicides, and fertilizers. Particulates generated by project traffic from the operation and construction of the project that may be deposited on paved surfaces and carried as runoff into natural waterways, could increase sedimentation impacts to Coyote Creek and San Francisco Bay. Although the exact amounts of these pollutants ultimately discharged into the creek and bay are unknown, over time the DEIR/FEIR predicts they could be substantial.

Runoff from the LECEF project site will be collected and discharged to the Coyote Creek by-pass channel rather than directly into the channel of Coyote Creek. Runoff would be collected in a system of storm water retention areas around the perimeter of the project site and then directed to the pump station in the northeast corner of the site, and ultimately the Coyote Creek by-pass channel. To the extent that runoff from the site percolates into the ground in the by-pass channel and sediment settles out of runoff before reaching Coyote Creek, the impacts of the project on water quality would be reduced from what would normally be found in urban runoff discharged to a creek.

The impacts to surface water quality will be less from the project site than the impact determined in the DEIR/FEIR, due to less traffic, smaller parking area, and the smaller stormwater flow which will be generated.

The project's increase in stormwater discharge due to changes in surface permeability would not result in a significant increase in water levels on Coyote Creek and would not result in flooding upstream or downstream during the 100-year flood event.

8.14.4.3 Recycled Water

8.14.4.3.1 Flow Reduction

The cooling and process water supply for the project will be recycled water provided by the SJ/SC WPCP through the SBWR program. Although the treatment capacity for the WPCP is 167 mgd, in 1989, the San Francisco Bay Regional Water Quality Control Board (RWQCB) imposed a 120 mgd effluent discharge limit on the WPCP, due to concerns about converting the habitat of two endangered species, the salt marsh harvest mouse and the California clapper rail, from salt marsh to brackish or freshwater marsh. To address these concerns, the RWQCB incorporated the following elements as a condition of the WPCP's 1998 NPDES Permit:

- Continue implementing the San Jose Action Plan (as revised December 22, 1992 and May 28, 1997) that incorporated the following activities designed to reduce the effluent flow to below 120 million gallons per day: water conservation, reclamation, wetlands mitigation, industrial water recycling, and increase public education.
- Develop and implement a Contingency Plan to provide ample assurance that the effluent flows of the WPCP are brought, and remain, below 120 million gallons per day.

Therefore, the use of recycled water as the project water supply provides the benefit of reducing the fresh water discharges to the San Francisco Bay. During peak operation of the project, effluent flow to the Bay would be reduced by 518,000 gallons per day (815,000 gallons per day use less 297,000 gallons per day discharge). In addition, the project site's proximity to the existing SBWR transmission pipeline allows for the development of a short pipeline connection to the site along an existing utility corridor, thereby minimizing the environmental impacts from the construction of the pipeline and maximizing the value of City's investments in the WPCP's recycled water project line.

8.14.4.3.2 Discharge Impacts to South Bay Water Recycling

The South Bay Water Recycling program markets recycled water for industrial and landscape uses to sites throughout San Jose and Santa Clara. As mentioned above, this program was initiated to decrease the amount of fresh water discharged from the WPCP into the saltwater estuary at the southern end of the San Francisco Bay.

The City of San Jose has required a number of businesses in the City to use recycled water from the South Bay Water Recycling program. The ability of businesses to use recycled water for industrial processes and landscape irrigation is dependent on keeping the total dissolved solids (TDS) concentrations in the water below levels that will substantially effect equipment, the reliability of industrial processes, or cause damage to landscaping. Other prospective uses of recycled water would require TDS concentrations to be even lower than current levels. The prospect of using recycled for augmenting dry weather stream flows and for groundwater recharge are hampered by TDS concentrations greater than 500 milligrams/liter. Therefore, increased salt concentration has been identified by the City's Environmental Services Department (ESD) as a potential constraint to the continued use of recycled water on a City-wide basis for industrial uses and landscaping, and ESD has announced its intention to develop a salinity control program through its Industrial Waste program on or around Fall 2001.

The use of recycled water in cooling towers has been encouraged, due to the fact that cooling towers use large quantities of water and can accommodate relatively high TDS concentrations. For the project, the SBWR recycled water will be used for cooling water, with an incoming TDS of approximately 760 mg/L. The TDS in the cooling water will be concentrated approximately three times before the water is blown down to the process wastewater sump (See Table 8.14-2). In addition, the water treatment for the NO_x suppression injection uses reverse osmosis membranes to concentrate TDS and other impurities approximately five times before the water is discharged to the process wastewater sump. Both streams will be combined and ultimately discharged to the sanitary sewer. The net amount of TDS concentration from the total industrial waste stream from the project will be between three and four times the initial TDS concentration of the SBWR recycled water. This discharge would not substantially add to the TDS loading of wastewater flows to the WPCP and ultimately to the SBWR program, but would concentrate the TDS delivered by the SBWR in the recycled water and increase the concentration of TDS in the plant effluent discharge and SBWR product water.

The DEIR/FEIR estimated that the entire U.S. Dataport project at buildout, could increase TDS concentrations in the WPCP effluent discharge by approximately 6 percent. The wastewater flows estimated for the entire U.S. Dataport project were 1.49 mgd. As the total wastewater flow from the LRCRF will be 0.30 mgd, the TDS concentrations in the WPCP effluent discharge are expected to increase approximately 1 percent with peak operation of the proposed project. The effects and potential impacts of increased salinity of the facility and other discharges on the SBWR recycled water quality have been analyzed for the Metcalf Energy Center project. These analyses determined that the effects of a 3 percent increase in salinity, though measurable, are not environmentally significant (*Analysis of Potential Salinity Effects of the SBWR Recycled Water Supply Due to Discharge of Cooling Tower*

Blowdown by Metcalf Energy Center, CH2M HILL, July 2000). Therefore, the impact of a 1 percent increase in salinity is clearly not environmentally significant.

8.14.4.4 Plant Sewage

During the average dry weather period (May 1 to October 31) the WPCP is permitted to treat up to 167 million gallons of influent flow per day, however, as mentioned above, discharge to the San Francisco Bay is limited to 120 mgd. The WPCP's treatment capacity of 167 million gallons per day is allocated between the several agencies served and the two co-owners through Master Agreements. The total capacity allocated to the City of San Jose is approximately 106.39 million gallons per day. There is no anticipated expansion of the WPCP or increase in its capacity in the next ten years.

The DEIR/FEIR discusses an estimated average wastewater flow of 1.49 million gallons per day on a yearly basis from the entire U.S. Dataport site. The industrial discharge from the project will be 297,000 gallons per day (of low strengths wastewater with respect to organics, solids, and nitrogen) during peak operation and 176,000 gallons per day during average operating conditions. Peak flows from the LECEF project to the WPCP would occur during otherwise (low flow seasons and dry weather), further reducing possible capacity impacts on the WPCP. An additional 2 gpm can be expected from sanitary wastes. Therefore, this relatively small flow to the WPCP will have little impact on the plant, and can readily be handled by the plant's treatment capacity.

The sanitary sewer connection necessary for the wastewater from project will be relatively short due to the site's proximity to the WPCP, and will be routed along the right-of-way of the primary access road. Impacts from this connection are not expected to be significant.

8.14.5 Mitigation

Mitigation is required for impacts to surface water from stormwater runoff. No mitigation is required for potential impacts on the SBWR facility from the use of recycled water at the project because the impacts of the project are insignificant; further, despite the measurable, although insignificant increase in salinity, no reduction in salinity in the discharge is not proposed as part of this project because it is not justifiable at this time given the City of San Jose's analysis on the issue associated with the U.S. Dataport project (which is discussed below).

8.14.5.1 Surface Water

The project will comply with the NPDES General Construction Activity Storm Water Permit administered by the Regional Water Quality Control Board. Prior to construction grading for the proposed land uses, the applicant will file a "Notice of Intent" (NOI) to comply with the General Permit and prepare a Storm Water Pollution Prevention Plan (SWPPP) which addresses measures that would be included in the project to minimize and control construction and post-construction runoff. The SWPPP will be submitted to the City of San Jose Department of Environmental Services. The following measures would be included in the SWPPP:

- Preclude non-storm water discharges to the storm water system.
- Perform monitoring of discharges to the storm water system.

A draft SWPPP will be submitted to the City of San Jose Department of Environmental Services for review and approval prior to construction of the project. The project will comply with the City of San Jose Grading Ordinance, including erosion- and dust-control during site preparation and with the City of San Jose zoning ordinance requirement for keeping adjacent streets free of dirt and mud during construction. The following specific measures would be implemented to prevent storm water pollution and minimize potential sedimentation during construction.

- Restrict grading to the dry season or meet City requirements for grading during the rainy season;
- Use silt fencing to retain sediment on the project site;
- Provide temporary cover of disturbed surfaces to help control erosion during construction;
- Provide permanent cover to stabilize the disturbed surfaces after construction has been completed.

The project design would include features to minimize non-point source pollutants from entering the Coyote Creek by-pass channel. As part of the mitigation for post-construction runoff impacts addressed in the SWPPP, regular maintenance activities (i.e., sweeping, cleaning storm water inlets, litter control) will be implemented to prevent soil, grease, and litter from accumulating on the project site and contaminating surface runoff. Storm water catch ditches will be stenciled to discourage illegal dumping.

The project, as proposed, will not result in significant flooding or storm drainage impacts, and therefore, no mitigation is necessary or proposed.

8.14.5.2 Recycled Water

The U.S. Dataport DEIR suggests several options for the mitigation of increased salinity caused by the discharge from the U.S. Dataport project which could conceivably be proposed to reduce the salinity effects of the proposed project:

- Construction of a facility by the San Jose-Santa Clara WPCP to provide additional treatment for recycled water to remove salts prior to delivery to recycled water customers
- Pre-treatment of high salinity effluent by users prior to discharge to the sanitary sewer system
- Installation of a separate discharge system and new outfall for cooling tower blowdown, bypassing the WPCP
- Additional land based application of effluent, building restrictions, water conservation, or other means to reduce WPCP effluent flows to the saltwater estuary at the southern end of the San Francisco Bay.

However, the DEIR/FEIR concludes that expansion of individual facilities to include additional treatment and/or separate wastewater systems, or the construction of a new South Bay Water Recycling facility to remove excess salts, could cause significant environmental effects that would need to be addressed in a site-specific environmental review. Therefore, while the methods outlined above may be feasible, a strategy for reducing future salinity of flows to the WPCP has not been adopted by the City of San Jose or the other communities served by the WPCP. The Resolution from the City Council (Resolution No. 70259) states that such a facility would not be an environmentally superior alternative to not having such a facility. Additional impacts to Burrowing Owl foraging habitat could occur on WPCP buffer land and additional wetland areas could be impacted. For these reasons, such a facility or portion thereof, is not proposed as part of the c*Power project.

8.14.6 Proposed Monitoring Plans and Compliance Verification Procedures

Routine monitoring will be required as part of the stormwater NPDES permitting of the project. Monitoring will also be performed to ensure compliance with industrial waste discharge permit limits. No additional monitoring of surface or groundwater would be required because no water quality impacts are expected to occur.

8.14.7 Cumulative Impacts

Cumulative impacts to water resources could occur through stormwater runoff, the use of recycled water, or the contribution of domestic sewage. The significance of these impacts to area water resources are discussed below.

- **Stormwater Runoff:** Development of the project site will increase the amount of contamination associated with modern electrical generation units and decrease the amount of contaminationi associated with agricultural activities in the storm water runoff, which could simultaneously increase and decrease amounts of the various constituents that measure the water quality of Coyote Creek or Artesian Slough. By complying with state and local stormwater pollution prevention programs and local grading requirements described above, impacts to stormwater quality will be reduced to a less than significant level.
  The project's increase in stormwater discharge would not result in a significant increase in water levels on Coyote Creek and would not result in flooding upstream or downstream during the 100-year flood and is, therefore, a less than significant impact.

- **Recycled Water:** The use of recycled water will have a positive benefit to the cumulative impacts of the WPCP discharge to the Bay by reducing total effluent flow of freshwater discharge to the South Bay—specifically reducing effects on salt marsh habitat, and species using that habitat. The project would increase the amount of salts in wastewater flows to the WPCP by less than a nominal 1 percent during its peak operation. Therefore, based on the positive benefit gained from flow reduction to the Bay, and the slight increase in salinity concentrations in flows to the WPCP, the project is considered to have a less than significant impact on the SBWR water quality from the use of recycled water.

  The DEIR/FEIR projected that the entire U.S. Dataport project at buildout could increase the TDS concentrations in the WPCP effluent discharge by approximately six percent, which could constrain the continued use of recycled water from the South Bay Water Recycling program. The DEIR/FEIR finds that increased salinity in recycled water produced at the WPCP could require new treatment facilities, the construction of which could cause significant environmental effects. A strategy for reducing salinity levels that would reduce this impact to a less than significant level has not yet been adopted by the City of San Jose or the other communities served by the WPCP. As described in the Resolution from the City Council (Resolution No. 70259), specific economic, legal, technological, or other considerations make mitigation of this impact infeasible. Therefore, based on the above considerations, the DEIR/FEIR finds the impact of salinity increase from the U.S. Dataport project to be significant and unavoidable.

While the DEIR/FEIR findings are appropriate for the larger facility analyzed in the U.S. Dataport project, due to the significantly smaller volume of industrial waste discharged from the c* power project, the cumulative impact from the use of recycled water is believed to be a less than significant impact.

- **Plant Sewage:** The expected industrial and sanitary sewage discharge flows from the project are relatively small, therefore, the cumulative impacts to the City of San Jose sewage system will not be significant. The proposed new sanitary sewer connections would not result in significant environmental effects.

8.14.8 Applicable Laws, Ordinances, Regulations, and Standards

Construction and operation of the proposed project will be conducted in accordance with all applicable laws, ordinances, regulations, and standards (LORS) related to water resources. The applicable LORS are discussed below.

8.14.8.1 Federal

8.14.8.1.1 Clean Water Act

The Clean Water Act (CWA), as amended, Title 40 CFR Parts 112, 122, and 125, strives to protect waters of the U.S. by restoring and maintaining the chemical, physical, and biological properties of these waters. The CWA authorizes the USEPA to regulate discharges of wastewater and stormwater into surface waters by using NPDES permits and pretreatment standards. These permits are implemented at the state level by the State Water Resources Control Board (SWRCB). One of the CWA's primary effects on the proposed project is with regard to the control of soil erosion during construction and the need to prepare and execute site-specific erosion control plans and measures for the construction of each project element that will entail the physical disruption or displacement of surface soil.

The CWA requires development of a SWPPP which will be administered by the San Francisco Regional Water Quality Control Board. The project will return wastewater to the WPCP, for recycling by the SBWR program and/or discharge under their permit.

8.14.8.1.1 40 CFR 423.17

40 CFR Part 423 deals with the steam electric power generating point source category. Section 423.17 addresses pretreatment standards, and lists the maximum allowable concentration permitted to be discharged in cooling tower blowdown from new sources. The cooling tower blowdown from the project meets the requirements of this regulation as discussed in Section 8.14.2.3.

8.14.8.2 State

8.14.8.2.1 California Environmental Quality Act

The CEQA Guidelines, Appendix G, define water resources impacts. These impacts are discussed in Section 8.14.4.

8.14.8.2.2 State Water Resources Control Board and San Francisco Regional Water Quality Control Board

SWRCB Water Quality Order No. 91-B-DWQ (as amended by Water Quality Order No. 92-13-DWQ), General Permit No. CAS000001, authorizes a general permit to regulate industrial stormwater discharges. A Notice of Intent will be filed with the RWQCB prior to the start of construction. A SWPPP will be developed in accordance with the guidelines of federal NPDES permit requirements, which addresses both construction and operations storm water pollution prevention. The SWPPP will identify Best Management Practices (BMPs) to be employed at the facility to prevent storm water pollution during the project's operating lifetime.

SWRCB Water Quality Order No. 92-08-DWQ, General Permit No. CAS000002, authorizes a general permit for storm water discharges associated with construction activity disturbing more than five acres.

8.14.8.2.3 California Water Code Section 461 and SWRCB Resolution No. 77-1

This code encourages the conservation of water resources and the maximum reuse of wastewater, particularly in areas were water is in short supply.

8.14.8.4 Title 22 of the California Code of Regulations

Title 22 addresses the use of recycled water; in particular, Section 60306 sets forth the criteria for the use of recycled water for cooling. Such cooling water is defined as disinfected tertiary recycled water in Section 60401.230. Regulations not yet in effect, but expected soon include the use of drift eliminators and chlorine (or other biocide) to eliminate potential pathogens in the cooling tower drift. These regulations are discussed in the air quality section, Section 8.1.

8.14.8.3 Local

Local ordinances typically address water-related issues such as drainage, erosion control, hazardous material spill control, facility siting in flood zones, stormwater discharge, as well as the use of reclaimed water and discharge to the municipal sewer system.

San Jose/Santa Clara WPCP Industrial Waste Discharge Regulations (pages 21 to 32) regulate the discharge to the City of San Jose wastewater system.

Ordinances for land grading and stormwater pollution control have been established by the county of Santa Clara (Santa Clara County Ord. No. NS1203.35, and NS517.55). These ordinances are discussed in Section 8.9.

The City of San Jose has established Excavation and Grading Code and policies for post-construction urban runoff management (City of San Jose Department of Planning, Building and Code Enforcement, 1998; San Jose Municipal Code 1979). The City grading regulations are discussed in Section 8.9.

The City of San Jose has established a zoning ordinance requirement for keeping adjacent streets free of dirt and mud during construction.

The Alviso Master Plan contains Environmental Protection Policies to protect the natural features and plant and wildlife species of the Alviso area from degradation as a result of development. In particular, Environmental Protection Policy 1 mandates proper drainage of new parking, circulation, loading, storage facilities, etc. to avoid potential pollutants from entering the groundwater, Coyote Creek, or San Francisco Bay.

The City of San Jose has established a Sustainable City Strategy reflecting their desire to become an environmentally and economically sustainable city, minimizing waste and efficiently using its natural resources. It includes energy reduction, water conservation, use of recycled water when feasible, and other "Green Building" measures.

The California State Planning Law requires that cities and counties prepare and adopt a General Plan that contains a conservation element (Government Code Section 65302 (d)) to provide for conservation, development, and use of natural resources.

- Conservation Objective (CO)-11: Community and specific plans shall specify urban runoff control strategies and requirements, consistent with Master Drainage Plans and the Department of Public Work’s urban runoff management program, for development in newly urbanizing areas. Sites are to be identified where retention and treatment are warranted, consistent with discharge permit requirements and county-wide runoff measures.
- CO-12: Development within newly urbanizing areas shall incorporate runoff control measures in their design or participate in area-wide runoff control management efforts consistent with the urban runoff management program developed by the Public Works Department.
- CO-14: Hazardous materials shall not be stored in the 100-year floodplain in such a manner as to pose a significant potential for surface water contamination.
- CO-16: Roads and structures shall be designed, built and landscaped so as to minimize erosion during and after construction.
- CO-47: All development projects, excluding single family homes, shall incorporate water-efficient landscaping.
- CO-48: Development project approvals shall include a finding that all feasible and cost-effective options for conservation and waste reuse are incorporated into the project design. Wastewater reuse options shall be revised and agreed upon by the area water purveyor when the reclaimed water is to be used within the water purveyor’s boundaries.
- Public Facilities (PF)-2: Municipal and industrial development within the Urban Services Boundary but outside of existing water purveyor’s service areas shall be served by either annexation to an existing public agency providing water service or by creation or extension of a benefit zone.

- PF-71: Requires new development to install fire hydrants and associated water supply systems which meet the fire flow requirements of the appropriate fire district.
- PF-72: New development shall provide access arrangements pursuant to the requirements of the uniform fire code.

8.14.9 Laws, Ordinances, Regulations, and Standards Compliance Strategy

Within the specified regulatory framework, the project will comply with federal, state, and local LORS governing water resources. A conformance summary is provided in Table 8.14-4.

The stormwater permitting process, including the preparation of an SWPPP, must begin prior to any construction activities. The Notice of Intent (NOI) and SWPPP must be filed prior to the start of construction activities. The general industrial stormwater NPDES permit must be filed prior to plant operations. A NOI must be filed 14 days prior to the beginning of industrial activity. The schedule described in Table 8.14-4 provides ample time to meet the requirements for obtaining all necessary permits.

8.14.10 Permits Required

The SFRWQCB is responsible for administering water quality permitting for the project. The two NPDES permits required are:

- SFRWQCB Construction Activity NPDES Stormwater Permit, General Permit, 1992.
- SFRWQCB General Industrial NPDES Stormwater Permit, General Permit November, 1991.

San Jose/Santa Clara WPCP will require an Industrial Wastewater Discharge Permit for discharge back to the sewage system.

A State Department of Health Services Title 22 Engineering Report (through the SBWR permit with SFRWQCB) will be filed as part of the permitting of recycled water use for cooling water.

A Recycled Water Use Permit application will be submitted to the SBWR, as is required for all recycled water customers within the program area.

TABLE 8.14-4
LORS Applicable to Water Resources

LORS	Applicability	Conformance
Federal:		
Clean Water Act (CWA) Sections 307, 318, 402(p), and 405	Regulates stormwater discharge	Stormwater discharges subject to NPDES permits for construction and industrial. Permits to be obtained through SWRCB. Requires a stormwater pollution prevention plan (SWPPP).
Title 40 of U.S.Code of Federal Regulations Part 423.17	Pretreatment standards for cooling tower blowdown for new sources	Cooling tower blowdown discharge will be in accordance with these more stringent standards.
State:		
State Water Resources Control Board	Regulates stormwater discharge	NPDES permits for construction and industrial stormwater.
California Water Code Section 461 & SWRCB Resolution No. 77-1	Encourages conservation of water resources and use of recycled water	Effective practices for water reuse and conservation were engineered into the facility design.
Title 22 of the California Code of Regulations	Requirements for the use of recycled water in cooling towers.	Project will conform to regulations. Title 22 Engineer's Report will be prepared.
Local:		
San Jose/Santa Clara WPCP Industrial Waste Discharge Regulations	Regulates discharges to the sewage system.	Project will conform. An Industrial Wastewater discharge permit is required for discharges to the sewer.
City of San Jose Municipal Code	Excavation and grading codes	Project will conform by implementing BMPs prior to construction.
Alviso Master Plan Environmental Protection Policies	Mandates proper drainage of developments to avoid pollutants from entering the groundwater, Coyote Creek, or San Francisco Bay.	Project will conform. Adequate drainage and pollution prevention were engineered into the facility design.
City of San Jose Sustainable City Strategy	"Green Building" measures	Project has been designed for energy-use reduction, water conservation, recycled water use, etc.
Various	Addresses issues such as drainage, erosion control, hazardous material spill control, facility siting in flood zones, stormwater discharge, and discharge of wastewater to the municipal sewer system.	Project will comply with the General Plan of the City of San Jose

A tabular summary of required permits is provided in Table 8.14-5.

TABLE 8.14-5
Permitting Agencies and Schedule for Water Resources Permits

Permit	Agency	Contact	Schedule
Construction Activity NPDES Stormwater Permit	SFRWQCB 1515 Clay St. Suite 1400 Oakland, CA 94612	Will Bruhns Senior Water Resources Control Engineer (510) 622-2327	Submit application 90 days prior to start of construction
General Industrial NPDES Stormwater Permit	SFRWQCB 1515 Clay St. Suite 1400 Oakland, CA 94612	Will Bruhns Senior Water Resources Control Engineer (510) 622-2327	Submit NOI at least 30 days prior to beginning operations
User Agreement for Recycled Water	San Jose MUNI 3025 Tuers Rd. San Jose, CA 95121	Bob Wilson Senior Civil Engineer (408) 277-3671	Submit application 90 days prior to start of operation
	City of San Jose Environmental Services Dept. 777 N. First St. Suite 300 San Jose, CA 95112	Randolph Shipes Deputy Director of Watershed Protection (408) 945-3068	
Industrial Wastewater Discharge Permit	City of San Jose Environmental Services Dept 4245 Zanker Road San Jose, CA 95134	John Mukhar Environmental Enforcement Program Manager (408) 945-3036	Application has been obtained. Submit application 90 days prior to start of operation
Title 22 Engineering Report	State of California DHS Berkeley Technical Unit 2151 Berkeley Way, Room Berkeley, CA 94704	Mike Finn Associate Sanitary Engineer (510) 540-2430	Submit Engineer’s Report during design of plant (at 30% design phase)

8.14.11 References

Aspen Environmental, NESJ Transmission Reinforcement Environmental Impact Report, June 2000.

Calpine Corporation and CH2M HILL. 2000. Application for Certification for Metcalf Energy Center. April 1999.

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City of San Jose. 2000. Draft Environmental Impact Report for the U.S. Dataport Planned Development Zoning. November 2000.

FEMA, 1997. Letter from Frederick Sharrocks of FEMA to Mayor Hammer of City of San Jose regarding Letter of Map Revision to revise 100-year flood plain, July 10.

FEMA, July 1997. Flood Insurance Rate Map reflecting changes in Letter of Map Revision.

SFRWQCB; SEEHRL/University of California, Berkeley; and SCVWD (Cooperative Report). 1985. Assessment of Contamination from Leaks of Hazardous Materials in the Santa Clara Groundwater Basin - 205j Report. February.

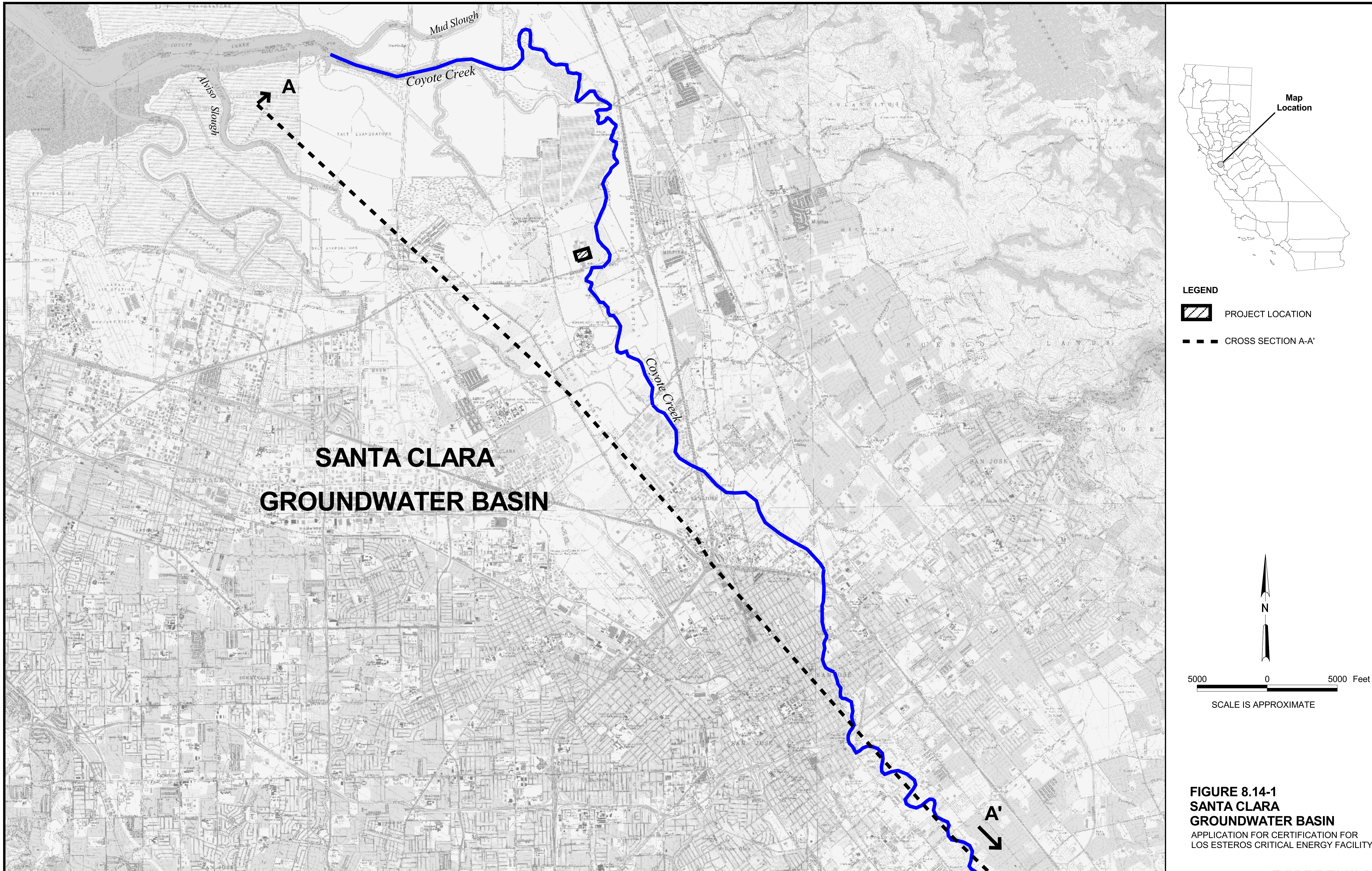

FIGURE 8.14-1
SANTA CLARA
GROUNDWATER BASIN
APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

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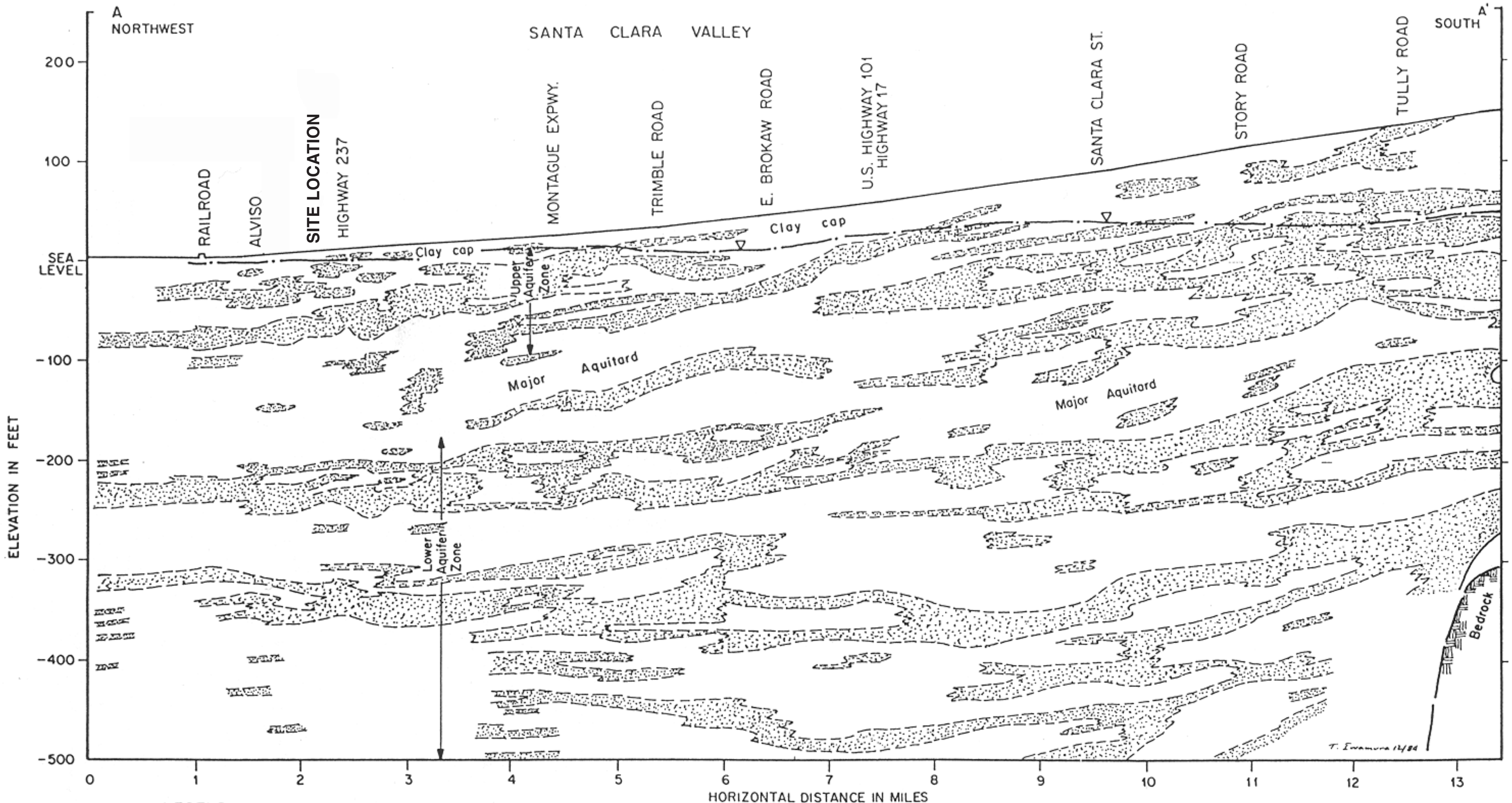
CH2M Hill RDD ArcView Project File \\Thor\Cart1\rddgis\san_jose\water.apr 8:15 a.m. 08-2-2001



LEGEND

DISTINGUISHABLE AQUIFERS--MIXTURES OF GRAVEL AND SAND. MEDIUM TO VERY HIGH PERMEABILITIES.

AQUITARD-- MIXTURES OF CLAY AND SILT, WITH SOME SAND AND GRAVEL, LOW TO VERY LOW PERMEABILITIES

APPROXIMATE WATER TABLE, 1984

NOTES:

1. REFER TO FIGURE 8.14-1 FOR LOCATION OF SECTION.
2. INTERPRETIVE SECTION BASED UPON AVAILABLE WELL LOGS.
3. AQUIFERS ARE GROUPED INTO UPPER AQUIFER ZONE AND LOWER AQUIFER ZONE, SEPARATED BY "MAJOR" AQUITARD.

SOURCE: SFRWQCB, 1985

FIGURE 8.14-2
CROSS SECTION THROUGH SANTA CLARA GROUNDWATER BASIN
APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

D072001001RDD_02 (7/25/01)

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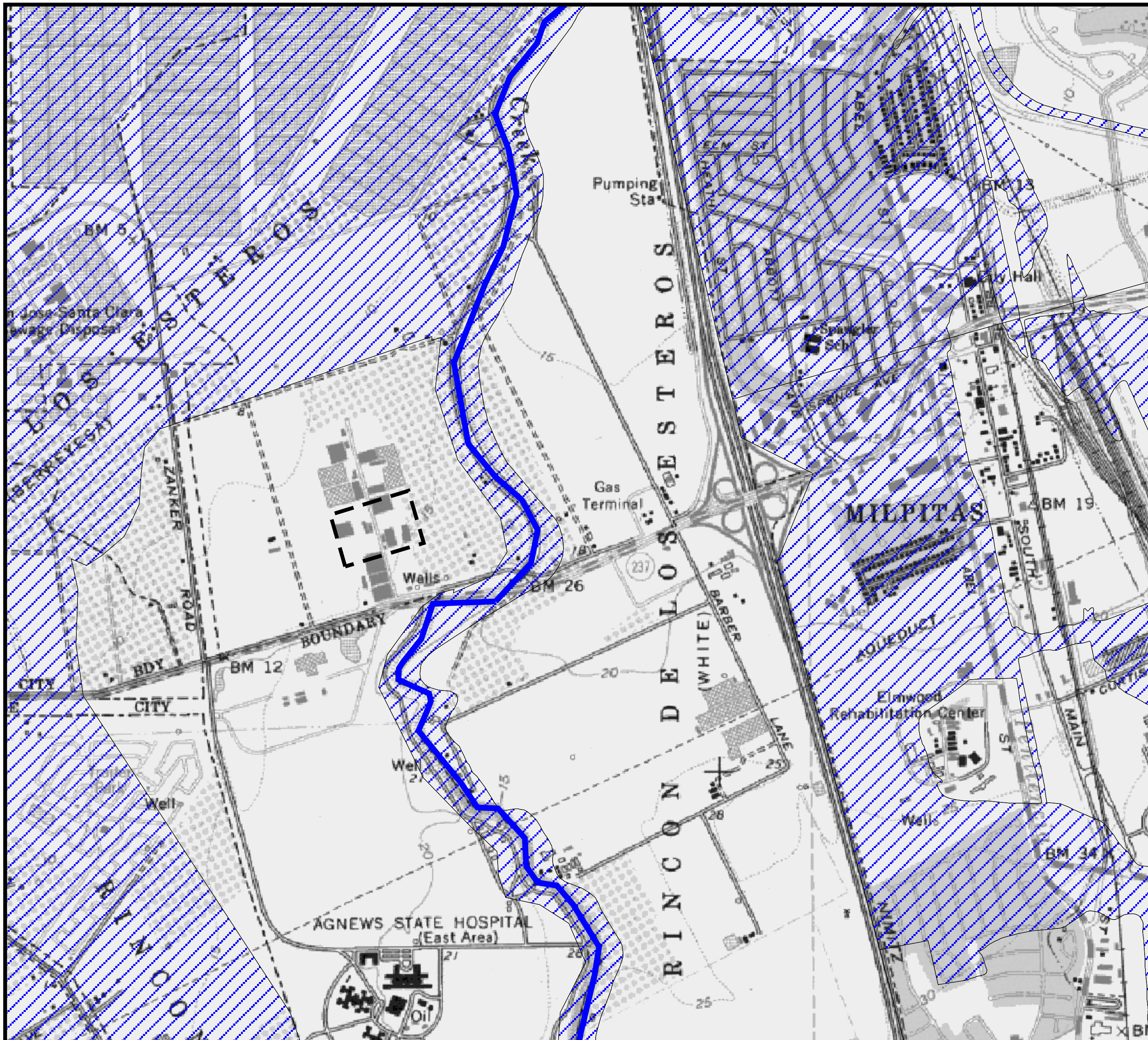

LEGEND
- PROJECT LOCATION
- 100 - YEAR FLOOD ZONE
- COYOTE CREEK

NOTE:
FEMA BOUNDARIES FROM 1997 HAVE BEEN MODIFIED WITH 2000 INFORMATION.
FLOOD LINES ARE APPROXIMATE

N

1000 0 1000 Feet

SCALE IS APPROXIMATE

FIGURE 8.14-3
100 - YEAR FLOOD MAP

APPLICATION FOR CERTIFICATION FOR LOS ESTEROS CRITICAL ENERGY FACILITY

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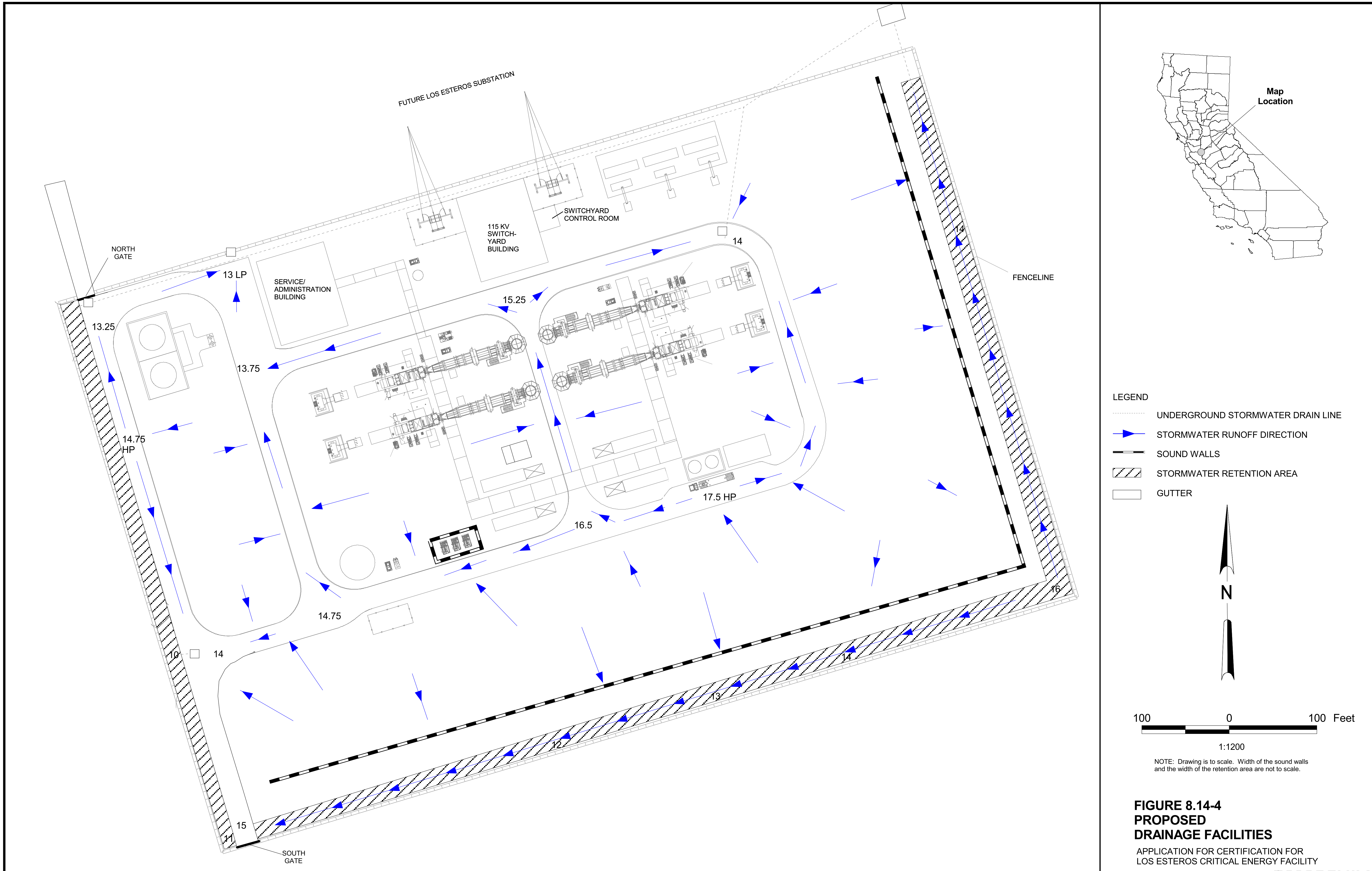

FIGURE 8.14-4
PROPOSED
DRAINAGE FACILITIES

APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

CH2MHILL

8.15 Geologic Hazards and Resources

This section evaluates the effect of geologic hazards and geologic resources that might be encountered in the proposed Los Esteros Critical Energy Facility project area. Section 8.15.1 describes the existing geologic environment in the project area and Section 8.15.2 describes the effects of the geological environment on the project. Section 8.15.3 presents mitigation needs. Mitigation measures will be determined during the design phase of the project. Section 8.15.4 presents laws, ordinances, regulations, and standards (LORS) that apply to geologic impacts from the project. Section 8.15.5 presents a list of the involved agencies and contacts in those agencies. Section 8.15.6 describes the permits that will be required and the schedule for obtaining them.

8.15.1 Affected Environment

The proposed site is located within the northern end of the Santa Clara Valley at the south end of San Francisco Bay. The valley is bordered by the Santa Cruz Mountains to the west by the Coast Ranges to the east. The Coast Ranges is a series of valleys and mountains along the West Coast of California that extend from Oregon to the Santa Ynez River near Santa Barbara. The proposed Los Esteros Critical Energy Facility site is approximately 120 acres and is located in the Alviso-Milpitas area of San Jose, in Santa Clara County (Township 6 South, Range 1 West; Latitude 25°'13", Longitude 122°'"; UTM zone 10, easting 594,600, northing 4,142,500). The proposed facility site is flat (elevation approximately 15 feet) and is underlain by thick alluvial deposits.

8.15.1.1 Regional Geology

The geology of the facility vicinity is structurally complex, largely a result of the interaction of the strike-slip tectonics of the San Andreas fault system and the compressional tectonics of the Coast Ranges. The regional geology is dominated locally by San Francisco Bay and tectonic activity associated with the San Andreas fault system to the west and the Hayward and Calaveras Faults to the east.

8.15.1.2 Local Geology

Figure 8.15-1 shows the geology within a 2-mile radius of the site. The following subsections discuss the structure and stratigraphy of the local area.

8.15.1.2.1 Structure

The structural geology of the area is dominated by deformation associated with historic tectonic activity, the numerous faults in the region (discussed below), and the more recent (Quaternary) deposition of alluvial deposition off of the Diablo and Santa Cruz mountains. Folding frequently occurs parallel to the local faults (Norris and Webb, 1990). The Santa Clara Valley is underlain by (Quaternary) alluvium and Bay Mud.

8.15.1.2.2 Stratigraphy

Several major units occur in the vicinity of the site. The mountains to the west and east of the site are dominated by the Francisican Complex.

Quaternary Alluvial Deposits. These are unconsolidated alluvial units deposited as alluvium from the adjacent mountains during the last 10,000 years. The majority of the alluvial deposits within the Santa Clara Valley emanated from Coyote Creek as it enters the valley (Iwamura, 1995; see Figure 8.14-1). Sand, gravel, and clay units are highly variable in the subsurface. Based on the Final Geotechnical Investigation for the U.S. DataPort site, the c*Power Los Esteros Critical Energy Facility site is underlain by stiff clays, loose clayey silt, and clayey sand to depths of 5 to 20 feet. Below these materials are interbedded strata of very stiff silty clay and loose to dense silty sand and sandy gravel to a depth of 100 feet. Depth to bedrock was not estimated as part of the geotechnical investigation for the U.S. DataPort Site. Depth to groundwater in January and July 2000 ranged from 6.5 to 19 feet below ground surface.

Franciscan Complex. The Franciscan Complex is a Middle to Late Jurassic (150 to 165 million years old) assemblage consisting of distinct units of sandstone, shale, chert, greenstone (metamorphosed basalt), and serpentinite (shallow mantle ultramafic). The Franciscan represents a melange, produced by the tectonic fragmenting and mixing of a subduction zone (Norris and Webb, 1990). The stratigraphy of the Franciscan Complex is very complex and has not been highly differentiated for the purposes of this study because it is located adjacent to, but not at the site itself.

Undivided Tertiary marine sedimentary rocks. This unit is composed of sandstone, siltstone, and shale, which are marine in origin.

Upper Cretaceous marine sedimentary rocks. Unit is typically undivided, may contain local areas that are predominantly composed of sandstone or shale, which are marine in origin.

8.15.1.3 Regional Seismicity

Regional seismicity at the site is influenced by the right-lateral strike-slip San Andreas Fault system and the compressional tectonics of the Coast Ranges. The tectonics of the Coast Ranges causes a series of folds and thrusts sub-parallel to the faults of the San Andreas fault system.

8.15.1.3.1 Major Faults

Table 8.15-1 lists active (Holocene) faults within 30 miles of the site. For each fault an estimate of the maximum credible earthquake (MCE) is listed based on California seismic hazard mapping (Mualchin, 1996) and the Working Group on Northern California Earthquake Potential (WGNCEP, 1996). Figure 8.15-2 shows the principal faults in the site region and identifies their 1991 activity designation. Fault data have been obtained from Jennings (1994), Mualchin (1996), Bortugno et al. (1991), NCEDC (1998), and Campbell et al (1995). Below is a brief description of the active faults in the site region and the maximum intensity of earthquake that can be expected from the faults. The discussion below provides estimates of the potential force of an earthquake along the identified faults, but the actual impact that could occur at the site would be based on the actual distance to the earthquake epicenter, magnitude of the earthquake, and response of the geologic units at the site to the earthquake. Other faults in the region, such as the Piercy, Silver Creek, Santa Clara, and Coyote Creek, are not considered active faults and therefore are not included in the discussion.

TABLE 8.15-1
Major Faults

Fault Name	Fault Length (miles)	Horizontal Distance to Site (miles)	Maximum Credible Earthquake (MCE) M_W
Calaveras	75	7	7.5
Greenville	45	23	7.25
Hayward	62	6	7.5
Ortigalita	41	24	7.0
San Andreas	745	14	8.0
Sargent	32	18	6.75

See report text for data sources.

Two scales are commonly used as a measure of earthquake intensity. The Richter scale (known technically as the "Richter local magnitude") is based on the largest amplitude of seismic waves as recorded on a Woodson-Anderson seismograph. Richter scale values use the symbol M_L. The "moment magnitude scale," (M_W) is currently favored by seismologists and is based on the seismic moment of the earthquake.

Calaveras Fault. The Calaveras fault is 75 miles long and is located approximately 7 miles east of the site at its closest point. This fault is one of the main branches of the San Andreas system, branching off south of Hollister. The Calaveras fault movement is mainly a right-lateral strike-slip. Because extensive landslide deposits cover the northern end of the fault, the location of the northern end of the fault has not been clearly identified. The MCE for the Calaveras Fault is estimated to be M_W 7.5 (Mualchin, 1996).

Greenville Fault. The Greenville fault is 45 miles long and is located 23 miles northeast of the site at its closest point. The fault extends from Bear Valley to just north of the Livermore Valley. The MCE for the Greenville Fault is estimated to be M_W 7.25 (Mualchin, 1996).

Hayward Fault. The Hayward fault is 62 miles long and is located 6 miles from the site at its closest point. The fault is considered to be the most likely source of the next major earthquake in the San Francisco Bay (WGNCEP, 1996). Although the fault has recently experienced a number of small seismic events, the last major earthquake on the Hayward fault was a Richter magnitude (M_L) 6.8 event in October 1868. The MCE for the Hayward Fault is estimated to be M_W 7.5 (Mualchin, 1996).

Ortigalita Fault. The Ortigalita fault is 41 miles long and is located approximately 24 miles east of the site at its closest point. The MCE for the Ortigalita Fault is estimated to be M_W 7.0 (Mualchin, 1996).

San Andreas Fault. The largest recorded earthquake in northern California, the 1906 moment magnitude (M_w) 7.9 San Francisco earthquake, occurred on the San Andreas fault. The fault is 745 miles long and is the largest active fault in California. The San Andreas fault is 14 miles from the site at its closest point. According to Mualchin (1996) the MCE on the San Andreas Fault is estimated to be M_W 8.0.

The San Andreas fault begins near the Salton Sea and extends northwards to Point Delgada on the coast. In northern California, the San Andreas fault parallels the direction of plate motion between the Pacific and North American plates. In central California, the San Andreas is a singular fault trace. Immediately south of the San Francisco Bay region, the San Andreas fault branches into the Calaveras and Hayward faults.

Sargent Fault. The Sargent fault is 32 miles long and is located approximately 18 miles southwest of the site at its closest point. The MCE for the Sargent Fault is estimated to be M_W 6.75 (Mualchin, 1996).

8.15.1.3.2 Historic Seismicity

Recent historic seismicity for the San Francisco Bay region is associated with the San Andreas, Hayward, Calaveras, and Greenville faults. Early settlers wrote the earliest records of earthquakes in this region in the 1800s. The Northern California Earthquake Data Center has compiled data for a total of approximately 7,940 earthquakes. There have been 12 recorded earthquakes of M_L 6.0 or greater in the San Francisco Bay region in recent history. Ground-shaking hazards are significant for earthquakes of this magnitude.

The most recent seismic events in the vicinity of the site include the 1979 Coyote Lake earthquake, the 1984 Morgan Hill earthquake, and the 1989 Loma Prieta earthquake. Evidence of liquefaction has been reported along Coyote Creek during these events. No information was found reporting the behavior of nearby structures during these seismic events.

8.15.1.4 Geologic Hazards

The following subsections discuss the potential geologic hazards that might occur in the project area.

8.15.1.4.1 Surface Fault Rupture

No active faults were found to cross either the site (Bortugno et. al., 1991).

8.15.1.4.2 Earthquake Ground Shaking

The most significant geologic hazard at the site is most likely strong ground shaking due to an earthquake. The site has experienced strong ground motions in the past and will continue to experience this in the future.

8.15.1.3 Liquefaction

During strong ground shaking, loose, saturated, cohesionless soils can experience a temporary loss of shear strength. This phenomenon is known as liquefaction. Liquefaction of soils is dependent on grain size distribution, relative density of the soils, degree of saturation, and intensity and duration of the earthquake. The potential hazard associated with liquefaction is seismically induced settlement. Evidence of liquefaction has been reported in the vicinity, especially near creeks and rivers. The site appears to contain liquefiable layers subject to some differential settlement. Specific estimates of liquefaction potential will be conducted after completion of the site-specific geotechnical study for the project.

8.15.1.4.4 Slope Stability

Slope instability depends on steepness of the slope, underlying geology, surface soil strength, and moisture in the soil. Because the site is flat, and no hills or mountains are nearby, the potential direct impact from landslides at the site is considered nonexistent.

8.15.1.4.4 Subsidence

Subsidence can be caused by natural phenomena during tectonic movement, consolidation, hydrocompaction, or rapid sedimentation. Subsidence can also result from human activities, such as withdrawal of water or hydrocarbons in the subsurface soils. No subsidence impacts are expected to the proposed facilities.

8.15.1.4.6 Expansive/Compressive Soils

Expansive soils have the ability to shrink and swell with wetting and drying. The shrink-swell capacity of expansive soils can result in differential movement beneath foundations. Many high clay content soils within the Santa Clara Valley are expansive. This condition requires special design considerations where applicable (City of Santa Clara, 1992). Soils tested on the site as part of the geotechnical investigation were found to have a low expansion potential.

8.15.1.5 Geologic Resources

No mineral or other geologic resources are known to exist at the site.

8.15.2 Environmental Impacts

8.15.2.1. Geologic Hazards

Ground shaking presents the most significant geologic hazard to the proposed site. Mitigation measures proposed in Section 8.15.3 should be implemented in the design of the facilities to reduce risk associated with these hazards. Table 8.15-2 summarizes the geologic hazards associated with the site.

TABLE 8.15-2
Summary of Potential Geologic Hazards

Project Component	Area of Potential Concern	Geologic Hazards of Potential Concern
Proposed Generating Equipment (15,000 sq. ft.)	Entire site	Seismic ground shaking; liquefaction

8.15.2.2 Geologic Conditions and Topography

Construction will require grading and excavation, thereby altering the terrain of the site. Impacts to the geologic conditions involve dust generation, changes in drainage, cuts, and fills. Since the site is generally level, site grading is not expected to adversely impact the geologic environment.

8.15.2.3 Linear Facilities

Linear facilities associated with the site include electricity, natural gas, water, wastewater, and stormwater discharge lines. These linear facilities are shown on Figure 2.1-1 and each is discussed below. The geologic hazards associated with the linear facilities are summarized in Table 8.15-2.

Electric Transmission Line. Seismically induced ground shaking, liquefaction present potentially significant hazards to the proposed 230 kV transmission line route. With implementation of the mitigation measures proposed in Section 8.15.3, the hazards will be reduced to acceptable levels.

Natural Gas Supply Line. Seismically induced ground shrinking, liquefaction, and possible high shrink-swell potential all present potentially significant hazards to this proposed natural gas pipeline route. With implementation of the mitigation measures proposed in Section 8.15.3, the hazards will be reduced to acceptable levels.

Water and Other Lines. The cooling tower water supply and discharge lines, onsite potable water supply lines (potable water will be trucked to the site), and storm drain are subject to potentially significant ground shaking, liquefaction, slope instability, and shrink-swell hazards. With implementation of the mitigation measures proposed in Section 8.15.3, the hazards will be reduced to acceptable levels.

8.15.2.4 Geologic Resources

No significant mineral resources are present in the site vicinity.

8.15.3 Mitigation Measures

The following subsections describe mitigation measures that might be used to reduce geologic hazards.

8.15.3.1 Surface Faulting Rupture

No active faults were found to cross the site (Bortugno et al., 1991). Therefore, no mitigation measure is required to reduce the hazard from surface faulting rupture.

8.15.3.2 Ground Shaking

The facility will need to be designed and constructed to withstand strong earthquake shaking as specified in the 1997 Uniform Building Code for Seismic Zone 4.

8.15.3.3 Liquefaction

The facility foundation systems will be designed to accommodate settlements that might be induced by post-liquefaction consolidation of the sand layer.

8.15.3.4 Slope Stability

No potential for slope instability impacts to the site are present.

8.15.3.5 Subsidence

Liquefaction-induced subsidence is a potential hazard at the site and along linear facilities. A program of site-specific exploratory borings will be carried out to delineate the extent of liquefiable materials at depth. Laboratory testing and engineering design will mitigate the potential hazard to acceptable levels.

8.15.3.6 Expansive Soils

No expansive soils have been found on the site during the geotechnical investigation.

8.15.4 LORS Compliance

Federal and state laws, ordinances, regulations, and standards (LORS) applicable to geologic resources and hazards are discussed below.

8.15.4.1 Federal LORS

The Uniform Building Code (1997) specifies the acceptable design criteria for structures and open excavations with respect to seismic design and load bearing capacity.

8.15.4.2 State LORS

The California Building Code (1998) specifies the acceptable design criteria for structures and open excavations with respect to seismic design and load bearing capacity.

8.15.5 Involved Agencies and Agency Contacts

Several agencies are involved with geologic resources and hazards. These include the San Francisco Bay Region Water Quality Control Board (SFRWQCB), the California Department of Conservation (CDOC), the California Division of Mines and Geology (CDMG), City of San Jose (SJC), and Santa Clara County (SCC). The agency contacts are shown in Table 8.15-3.

TABLE 8.15-3
Agency Contacts

Agency	Contact	Title	Telephone
SFBRWQCB	Will Bruhns	Project Engineer	1-510-622-2327
CDMG	Jim Davis	State Geologist	1-916-445-1923
City of San Jose	Mike Schimamoto	City Geologist	1-408-277-5161
SCC	Jim Baker	County Geologist	1-408-299-2871

8.15.6 Permits Required and Permit Schedule

A construction permit is required and will be obtained from the City of San Jose prior to commencement of construction. Approximately 4 to 6 weeks will be required to obtain this permit.

8.15.7 References

Bortugno, E.J., McJunkin, R.D. and Wagner, D.L. 1991. Map Showing Recency of Faulting, San Francisco-San Jose Quadrangle, California. California Division of Mines and Geology. Regional Geologic Map Series, 1:250,000 scale.

Campbell, K.W., Thenhaus, P.C., Sangines, E.M., and Seligson, H.A. 1995. Expected Ground Shaking Intensities form a Magnitude 7 Earthquake on the Monte Vista-Shannon and Santa Clara Thrust Faults, Santa Clara Valley, Santa Clara County, California in Recent Geologic Studies in the San Francisco Bay Area, Sangines, E.M., Anderson, D.W., and Buising, A.V., eds. Pacific Section of the Society of Economic and Paleontologists and Mineralogists.

Iwamura, T.I. 1995. Hydrogeology of the Santa Clara and Coyote Valleys Groundwater Basins, California in Recent Geologic Studies in the San Francisco Bay Area, Sangines, E.M., Anderson, D.W., and Buising, A.V., eds. Pacific Section of the Society of Economic and Paleontologists and Mineralogists.

Jennings, C. W. 1994. Fault Activity Map of California and Adjacent Areas. California Division of Mines and Geology. California Geologic Data Map Series, Map No. 6. 1:750,000 scale.

Mualchin, L. 1996. A Technical Report to Accompany the CALTRANS California Seismic Hazard Map. Prepared for CALTRANS by the Office of Earthquake Engineering, 70 pp.

Norris, R. M. and Webb, R. W. 1990. Geology of California (second edition). John Wiley and Sons. New York. 365 pp.

Northern California Earthquake Data Center (NCEDC). 1998. Earthquake Catalogue, United States Geologic Survey, and University of California at Berkeley (http:\\quake.geo.berkeley,edu).

Wagner, D.L., Bortugno, E.J. and McJunkin, R.D. 1990. Geologic Map of the San Francisco-San Jose Quadrangle, California. California Division of Mines and Geology. Regional Geologic Map Series, 1:250,000 scale.

Working Group on Northern California Earthquake Potential (WGNCEP). 1996. Database of Potential Sources for Earthquakes Larger than Magnitude 6 in Northern California. U.S. Geological Survey. Open-File Report 96-705. 40 pp.

Working Group on California Earthquake Probabilities (WGCEP). 1990. Probabilities of Large Earthquakes in the San Francisco Bay Region, California. U.S. Geological Survey. Circular 1053. 51 pp.

LEGEND

Q ALLUVIUM
Qi INTERTIDAL DEPOSITS
Qo OLDER ALLUVIUM

SOURCE:
ADAPTED FROM GEOLOGIC MAP OF THE SAN FRANCISCO-SAN JOSE QUADRANGLE CALIFORNIA, 1:250,000 REGIONAL GEOLOGIC MAP SERIES, 1991

N

1000 0 1000 Feet

SCALE IS APPROXIMATE

1:24,000

FIGURE 8.15-1
AREA GEOLOGY
APPLICATION FOR CERTIFICATION FOR LOS ESTEROS CRITICAL ENERGY FACILITY

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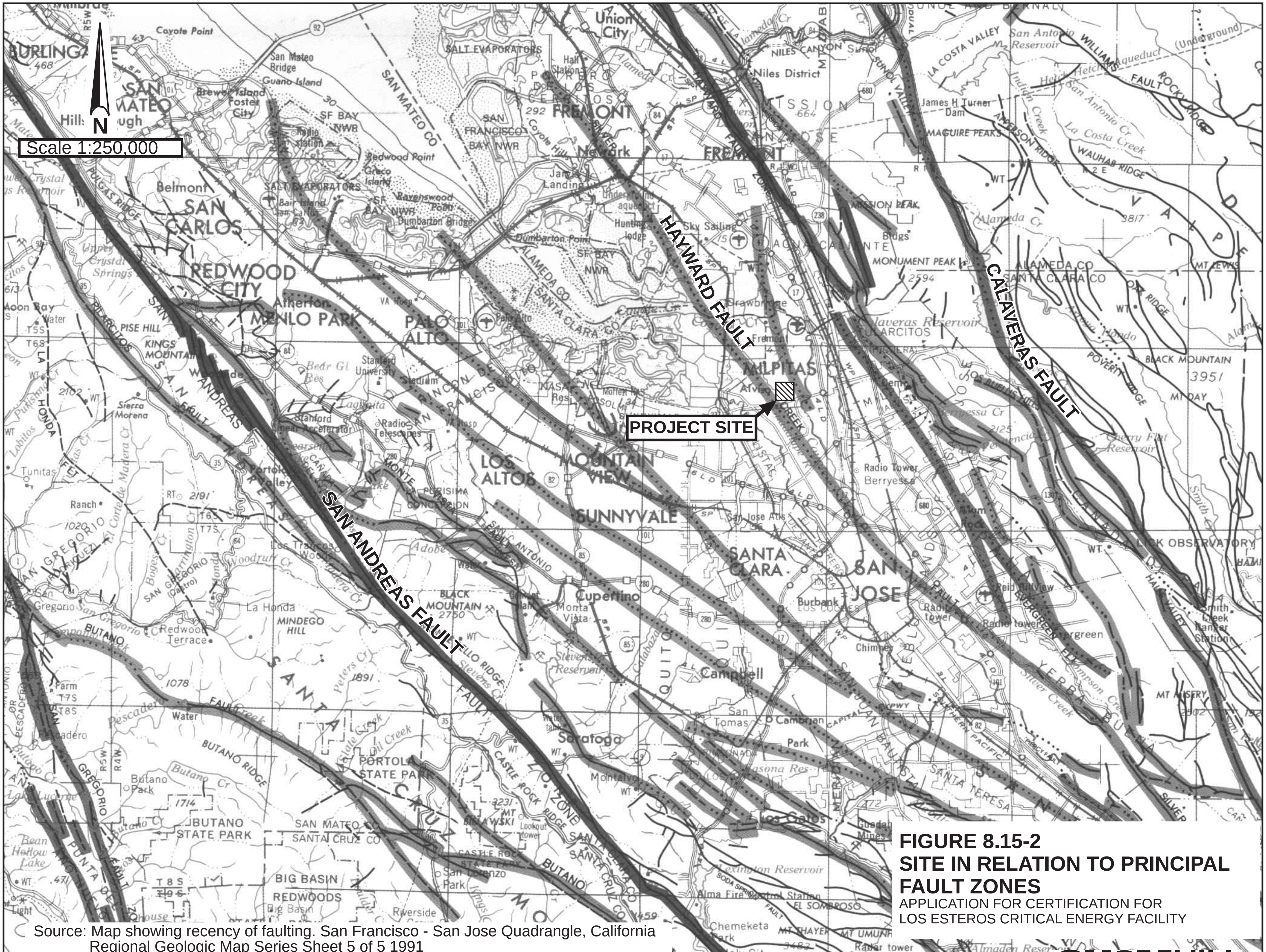

Source: Map showing recency of faulting. San Francisco - San Jose Quadrangle, California Regional Geologic Map Series Sheet 5 of 5 1991

FIGURE 8.15-2
SITE IN RELATION TO PRINCIPAL FAULT ZONES
APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

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8.16 Paleontological Resources

Paleontological resources (fossils) are the remains or traces of prehistoric plants and animals. Fossils are important scientific and educational resources because of their use: 1) in documenting the presence and evolutionary history of particular groups of now extinct organisms, 2) in reconstructing the environments in which these organisms lived, and 3) in determining the relative ages of the strata in which they occur and of the geologic events that resulted in the deposition of the sediments that formed these strata and in their subsequent deformation.

This section of the AFC summarizes the potential environmental impacts on paleontological resources that may result from construction of the LECEF. Section 8.16.1 describes the existing environment that could be affected by the proposed LECEF project. Section 8.16.2 describes the potential impacts on paleontological resources resulting from construction and operation of the proposed project. The cumulative impacts to paleontological resources are discussed in Section 8.16.3. Proposed mitigation measures to reduce potential adverse impacts to paleontological resources are discussed in Section 8.16.4. Section 8.16.5 lists the federal and state LORS and the professional standards that protect paleontological resources. The involved agencies and agency contacts are provided in Section 8.16.6. Section 8.16.7 discusses the status of permits required and permit schedule. Section 8.16.8 lists the references used in preparing this document.

This paleontological resources inventory and impact assessment was prepared by Dr. Lanny H. Fisk, PhD, a registered geologist, senior paleontologist, and a principal of PaleoResource Consultants (PRC). It meets all requirements of the California Energy Commission (CEC, 2000) and the standard measures for mitigating adverse construction-related environmental impacts on paleontological resources established by the Society of Vertebrate Paleontology (SVP) (1991, 1995, 1996).

A paleontological resource can be significant if:

- It provides important information on the evolutionary trends among organisms, relating living organisms to extinct organisms.
- It provides important information regarding development of biological communities or interaction between botanical and zoological biota.
- It demonstrates unusual circumstances in biotic history.
- It is in short supply and in danger of being depleted or destroyed by the elements, vandalism, or commercial exploitation, and is not found in other geographic localities.

Under CEQA guidelines (Public Resources Code 15064.5(a)(2), public agencies must treat all historical and cultural resources as significant unless the preponderance of evidence demonstrates that they are not historically or culturally significant. In keeping with significance criteria of the SVP (1991), all vertebrate fossils are categorized as having significant scientific value.

8.16.1 Affected Environment

8.16.1.1 Geographic Location

The LECEF site is located along the gently sloping southern shore of San Francisco Bay (Bay), which is centrally located within the Coast Ranges Physiographic Province (Jahns, 1954; Fenneman, 1931), in west central California. The Bay fills a north-northwest-trending structural depression in the central Coast Ranges and lies between the San Andreas Fault to the southwest and the Hayward Fault to the northeast. The project area is bounded on the south by ridges that comprise part of the Coast Range, and on the north, by the Bay itself. The modern Bay shoreline is approximately six miles (10 kms) west-northwest of the LECEF site. However, in 1857 tidal marshlands actually extended nearly five miles (6.2 kms) further inland (Nichols and Wright, 1971; see also Helley and Miller, 1992).

The project site and linears will all be located just north of the Alviso-Milpitas Freeway (Highway 237) in northern Santa Clara County and in the U. S. Geological Survey (USGS) Milpitas Quadrangle (1:24,000). The project site lies in the northern portion of San Jose, adjacent to the city limits of Milpitas and between Coyote Creek on the east boundary and Zanker Road on the west boundary. The site is centered at approximately 37°25'24" N. latitude and 121°55'48" W. longitude in what was once the Rincon do los Esteros Mexican Land Grant.

8.16.1.2 Regional Geologic Setting

The general geology of the San Francisco Bay area has been described in some detail by Lawson (1895, 1914), Louderback (1939, 1951), Taliaferro (1941, 1951), U. S. Army Corps of Engineers (1963), Treasher (1963), Trask and Rolston (1951), Goldman (1967, 1969a), Finlayson et al. (1967), Finlayson et al. (1968), Schlocker (1968), Helley et al. (1979), Wahrhaftig and Sloan (1989), and Wahrhaftig et al. (1993), among others. The information in these and other published reports form the basis of the following discussion. Individual publications are incorporated into this report and referenced where appropriate.

The aspects of geology pertinent to this report are the types, distribution, and age of sediments immediately underlying the project area and their probability of producing fossils during earth moving related to project construction. Geological materials in the general vicinity of the project site can be divided into two distinct units: bedrock composed of Jurassic and Cretaceous age weakly metamorphosed sandstone, siltstone, chert, and greenstone named the Franciscan Formation; and a much younger, unconsolidated, sedimentary sequence that ranges from Pleistocene to Recent in age and which has been variously subdivided by geologists. Formal formation names have been applied to the Pleistocene to Recent sedimentary sequence by some authors (see for instance Lawson, 1914). However, most geologists working in the San Francisco Bay area prefer to use informal designations, such as “older bay mud”, “sand deposits”, and “younger bay mud.”

The Santa Cruz Mountains, Monte Bello Ridge, and adjacent hills located south and southwest of the proposed project site consist of steeply dipping, partially metamorphosed sedimentary rocks of the Franciscan Formation. Similar rocks also form the basement bedrock underlying the Santa Clara lowland and the San Francisco Bay. The gently sloping alluvial fan and flood plain known as the Santa Clara Lowland is the surface of alluvial fill consisting of medium- to fine-grained sediment eroded primarily from Franciscan rocks in the adjacent hills. These alluvial fan deposits grade northward from the Santa Cruz

Mountains through gradually decreasing grain sizes from coarse gravel at the foothills to clay-rich mud in the bay plain. The poorly-sorted and lenticular gravel, sand, silt, and clay that underlie the Santa Clara Lowland and adjacent bay plain unconformably overly the bedrock Franciscan Formation.

The geologic history of the project area is imperfectly known. Considerable difficulty in interpreting the geologic history is due to the fact at that many of the deposits have limited local extent and their time relations cannot be determined by either tracing their lateral continuity or determining their relative superposition. In addition, not all units contain age-diagnostic fossils. The result is that, even after years of study by geologists and paleontologists, any statement of the geologic history of the San Francisco Bay region must still be looked upon as incomplete. Our understanding has not dramatically improved since Savage (1951, p. 215) stated: "*Many stratigraphic problems still exist in this area despite the fact that these problems have at times received the attention of competent geologists and paleontologists*." Some of the stratigraphic relationships and ages of stratigraphic units are still uncertain. Thus, new excavations have the potential to yield important new information, new fossils, or other field evidence, which will add to, confirm, or require modifying previous inferences and interpretations. This new information has the potential to provide a more complete and accurate understanding of the geologic history of the area.

8.16.1.3 Resource Inventory Methods

To develop a baseline paleontological resource inventory of the project site and surrounding area and to assess the potential paleontological productivity of each stratigraphic unit present at the site, the published as well as available unpublished geological and paleontological literature was searched; stratigraphic and paleontological inventories were compiled, synthesized, and evaluated (see below). These tasks are in compliance with CEC (2000) and SVP (1991, 1995) guidelines for assessing the importance of paleontological resources in areas of potential environmental effect. To obtain information for this assessment, no subsurface exploration was conducted.

Geologic maps and reports covering the bedrock and surficial geology of the project site and surrounding area were reviewed to determine the exposed and probable subsurface rock units, to assess the potential paleontological productivity of each rock unit, and to delineate their respective areal distribution in the project area. In addition, available aerial photographs of the area were examined to aid in determining the areal distribution of distinctive sediment and soil types.

A field survey, which included a visual inspection of exposures of potentially fossiliferous strata in the project area, was conducted to document the presence of any sediments suitable for containing fossil remains and the presence of any previously unrecorded fossil sites. The field survey was conducted on 6 and 11 June 2001 by Dr. Lanny H. Fisk, Ph.D., a Senior Paleontologist with PRC.

Published and unpublished geologic and paleontological literature (including previous environmental impact assessment documents and paleontological resource impact mitigation program final reports) were reviewed to document the number and locations of previously recorded fossil sites from rock units exposed in and near the project site and the types of fossil remains each rock unit has produced. The literature review was supplemented by archival searches conducted at the University of California Museum of Paleontology (UCMP) in Berkeley, California, looking for additional information regarding the occurrence of fossil sites and remains in and near the project site. In addition, the California Academy of Science (CAS) in San Francisco and the USGS in Menlo Park were contacted regarding any CAS or USGS fossil sites in the area.

8.16.1.4 Paleontological Resource Assessment Criteria

The paleontological importance or sensitivity (high, low, none, or undetermined) of each rock unit exposed in the project site or surrounding area is the measure most amenable to assessing the significance of paleontological resources because the areal distribution of each rock unit can be delineated on a topographic or geologic map. The paleontological importance of a stratigraphic unit reflects: (1) its potential paleontological productivity (and thus sensitivity), and (2) the scientific significance of the fossils it has produced.

This method of paleontological resources assessment is the most appropriate because discrete levels of paleontological importance can be delineated on a topographic or geologic map.

The potential paleontological productivity of a stratigraphic unit exposed in the project area is based on the abundance/densities of fossil specimens and/or previously recorded fossil sites in exposures of the unit in and near a project site. The underlying assumption of this assessment method is that exposures of a stratigraphic unit in a project site are most likely to yield fossil remains both in quantity and density similar to those previously recorded from that unit in and near the project site.

An individual fossil specimen is considered scientifically important if it is:

- Identifiable,
- Complete,
- Well preserved,
- Age diagnostic,
- Useful in paleoenvironmental reconstruction,
- A type or topotypic specimen,
- A member of a rare species,
- A species that is part of a diverse assemblage, and/or
- A skeletal element different from, or a specimen more complete than, those now available for that species. For example, identifiable land mammal fossils are considered scientifically important because of their potential use in providing accurate age determinations and paleoenvironmental reconstructions for the sediments in which they occur. Moreover, vertebrate remains are comparatively rare in the fossil record. Although fossil plants are usually considered of lesser importance because they are less helpful in age determination, they are actually more sensitive indicators of their environment and, thus, as sedentary organisms, more valuable than mobile mammals

for paleoenvironmental reconstructions. For marine sediments, invertebrate fossils, including microfossils, are scientifically important for the same reasons that land mammal and/or land plant fossils are valuable in terrestrial deposits. The value or importance of different fossil groups varies depending on the age and depositional environment of the stratigraphic unit that contains the fossils.

The following tasks were completed to establish the paleontological importance and sensitivity of each stratigraphic unit exposed in or near the project site:

- The potential paleontological productivity of each rock unit was assessed based on the density of fossil remains and/or previously recorded and newly documented fossil sites it contains in and/or near the project site.
- The scientific importance of fossil remains recorded from a stratigraphic unit exposed in the project site was assessed.
- The paleontological importance of a rock unit was assessed, based on its documented and/or potential fossil content in the project site and surrounding area.

Categories of Sensitivity. In its standard guidelines for assessment and mitigation of adverse impacts to paleontological resources, the SVP (1995) established three categories of sensitivity for paleontological resources: high, low, and undetermined.

High Sensitivity. Stratigraphic units in which fossils have been previously found that have a high potential to produce additional fossils. In areas of high sensitivity, full-time monitoring is recommended during any project ground disturbance.

Low Sensitivity. Stratigraphic units that are not sedimentary in origin and that have not been known to produce fossils in the past. Monitoring is usually not recommended nor needed during project construction.

Undetermined Sensitivity. Stratigraphic units that have not had any previous paleontological resource surveys or fossil finds. After reconnaissance surveys, observation of exposed cuts, and possible subsurface testing, a qualified paleontologist can determine whether the stratigraphic unit should be categorized as having high, low, or undetermined sensitivity.

In keeping with the significance criteria of the SVP (1995), all vertebrate fossils are categorized as having significant scientific value and all stratigraphic units in which vertebrate fossils have previously been found have high sensitivity.

8.16.1.5 Resource Inventory Results

8.16.1.5.1 Stratigraphic Inventory

Regional geologic mapping of the LECEF project site and vicinity has been provided by Jenkins (1938, 1:500,000 scale), Jennings and Burnett (1961; 1:250,000 scale), Rogers (1966; 1:250,000 scale), Finlayson et al. (1967; 1:125,000 scale), Schlocker (1971, 1:500,000 scale), Helley et al. (1979; 1:125,000 scale), and Wahrhaftig et al. (1993, 1:1,000,000 scale). Larger scale mapping of the project site is provided by Lawson (1914; 1:62,500 scale), and Helley and Brabb (1971, 1:24,000 scale). Dibblee (1972) has provided a geologic map (1:24,000 scale) of the San Jose East Quadrangle, which adjoins the area to the southeast.

Unfortunately, in their geologic maps of the Late Cenozoic deposits of the San Francisco Bay area, USGS geologists (for instance Jennings and Burnett (1961), Dibblee (1966), Helley and Brabb (1971), Dibblee (1972), and Helley et al. (1979)) have not consistently used the formally named formations of Lawson (1914), nor have they consistently used the same map units. Unfortunately, no one has yet proposed a uniform nomenclature for Quaternary deposits in this region as Marchand and Allwardt (1981) have done for the northeastern San Joaquin Valley. When mapping in the San Francisco Bay area, USGS geologist have typically used map units which reflect depositional processes or facies, rather than lithologically and chronologically distinctive map units. As a result of different geological map units being used, considerable interpretation is required to compare these sources and determine stratigraphic relations and relative ages of the individual map units. This task is further complicated by that fact that pavement, sidewalks, and buildings restrict examination of the surface geology. In addition, the geology has been obscured in many places by cutting and filling for urban development and flood control.

Being facies subdivisions of alluvial fan deposits, many contacts on USGS geologic maps are actually gradational, with alluvial fans grading into alluvial flood plains, which grade imperceptibly into the bay plain. Given these circumstances, the mapped boundaries may represent the best possible estimate of facies distribution; however, they have limited utility in determining stratigraphic superposition, relative age, or potential for producing significant paleontological resources. In addition, using facies subdivisions makes it more difficult to compare descriptions of fossil sites which typically use formally named stratigraphic units. For these reasons, in this discussion I have chosen to use the formally named stratigraphic units of Lawson (1914), which have been found to be generally applicable to the area (Trask and Rolston, 1951; Mitchell, 1963), despite the fact that many current USGS geologists, engineering geologists, and hydrogeologists prefer to use informal stratigraphic units such as “older Bay mud” and “younger Bay mud.” In their work on sedimentary deposits underlying San Francisco Bay, both Treasher (1963) and Goldman (1967) correlated their informal “older Bay mud” with the San Antonio and Alameda Formations of Lawson (1914) and their “younger Bay mud” with Lawson’s “Bay mud.” Lawson (1914) considered Recent Bay mud and “salt-marsh deposits” to be equivalent to the Holocene continental sediments he named the Temescal Formation (see also Trask and Rolston, 1951). A correlation chart comparing the formal stratigraphic units of Lawson (1914) with the facies map units of many USGS geologists is provided in Table 2.1.5-1 below. Quite simply, the Temescal Formation of Lawson (1914) is the equivalent of latest Pleistocene and Holocene map units and Lawson’s San Antonio Formation is equivalent to older Pleistocene map units. The limiting geologic ages of these two stratigraphic units are still uncertain.

TABLE 8.16-1
Tentative Correlation of Quaternary Alluvium in the San Francisco Bay Area Exposed in Alluvial Fans, Flood Plains, and Bay Plains.

Lawson (1914)	USGS Map Units
Temescal Formation	Alluvium (Qal), sedimentary deposits undifferentiated (Qu), bay mud (Qm), beach deposits (Qb), dune sand (Qd), sand dune and beach deposits (Qs), slope debris and ravine fill (Qsr), younger alluvial fan deposits (Qyf), younger (inner) alluvial fan deposits (Qyr), younger (outer) alluvial fan deposits (Qyfo), basin deposits (Qb), colluvium (Qcl), younger fluvial deposits (Qyfo), interfluvial basin deposits (Qb), alluvial fan and fluvial deposits (Qhaf), levee deposits (Qhl), floodplain deposits (Qhfp), floodbasin deposits (Qhb), floodbasin deposits (salt-affected) (Qhbs), and estuary deposits (Bay mud) (Qhbm)
San Antonio Formation	Older alluvial fan deposits (Qof), alluvial fan deposits (Qpaf), older mud (Qom), coarse-grained older alluvial fan and stream terrace deposits (Qof), fine-grained older basin and alluvial fan deposits (Qob), and marine terrace deposits (Qmt)

Lawson's (1914) marine Merritt Sand and Alameda Formation do not crop out in the immediate vicinity of the proposed project (Helley and Brabb, 1971), and, therefore, are not considered further in this discussion.

Site Geology. As mapped by Jennings and Burnett (1961) and Helley and Brabb (1971), the project site is located on unconsolidated, Holocene-age alluvial fan deposits equivalent to Lawson's (1914) Temescal Formation. The entire site and surrounding area has been mapped as "Qyfo, fluvial deposits at the outer edge of young alluvial fans" by Helley and Brabb (1971). Older alluvial deposits of Pleistocene age, equivalent to the San Antonio Formation of Lawson (1914), may be found at an unknown depth below these Holocene-age alluvial deposits. These older sediments may be encountered in the deepest excavations at the project site. Helley and Brabb (1971) suggest that sediments of the overlying Temescal Formation may have a thickness as shallow as five feet or as a deep as 20 feet.

Sediments of the Temescal Formation are exposed in the channel bottom and banks of Coyote Creek approximately 0.3 mile (0.5 km) south of the project site. These naturally eroded stream cuts expose a stratigraphic section of up to 15 feet, consisting of weakly consolidated sandy or pebbly silt, with discontinuous lenses of coarse sand and pebble gravel. The degree of sorting and the lenticular nature of the sands suggest deposition in a shallow fluvial environment, consistent with Helley and Brabb's (1971) interpretation as the distal or lower portion of a gently sloping alluvial fan. No fossils were observed; however, the depositional environment appeared to be conducive to both transport and burial of vertebrate, invertebrate, and plant remains.

Temescal Formation. Late Pleistocene and Holocene age "younger alluvium" in the San Francisco Bay area was referred to the Temescal Formation by Lawson (1914), who included within this formation alluvial deposits younger than and overlying the marine Merritt Sand. These younger alluvial deposits developed in part from the erosion and redeposition of older alluvium. The principal differences between the younger and older alluvium are stratigraphic position, lithologic components, degree of consolidation, topographic expression, attitude (tilted versus flat-lying), and fossil content. According to Savage (1951), sediments in the San Francisco Bay area containing latest Pleistocene and Holocene fossil faunas can often be distinguished from the older Pleistocene deposits by the relatively flat-lying attitude of the former, while, in contrast, the older sediments containing Early Pleistocene fossil faunas are often slightly tilted. This criteria has also been helpful to others in distinguishing older alluvium from younger alluvium (see Taliaferro, 1951; Hall, 1958; and Helley et al., 1972). According to Taliaferro (1951), the tilting of Early Pleistocene sediments is a direct result of "the mid-Pleistocene orogeny" (but see Christensen [1987] for a contrary view).

San Antonio Formation. Lawson (1914) applied the name San Antonio Formation to alluvial deposits of Pleistocene age. The San Antonio Formation is probably Early to Late Pleistocene in age (Louderback, 1951). Strata comprising the San Antonio Formation have been deformed by frequent tectonic activity and are often recognizable from the overlying and younger Temescal Formation by their non-flat-lying attitude (Savage, 1951). The older stratigraphic unit often also has a distinct topographic expression. Lawson (1914) stated that since its deposition, the San Antonio Formation has been "*thoroughly dissected and terraced*." As Late Pleistocene uplift exposed parts of the San Antonio age alluvial fan deposits, Recent streams cut below the Early to Middle Pleistocene surface, leaving many erosional remnants preserved as topographic highs (Robinson, 1956).

The simple, two-part subdivision of the alluvial fan deposits of the San Francisco Bay area used in this report appears to be defensible not only on the bases of stratigraphic superposition, topographic expression, and the presence or absence of deformation, but also on the basis of fossil content. From his survey of vertebrate faunas from the non-marine Quaternary deposits of the San Francisco Bay region, Savage (1951) concluded that only two divisions could be recognized. He named the earlier Pleistocene fauna the Irvingtonian North American Land Mammal Age and the later Pleistocene and Holocene fauna the Rancholabrean North American Land Mammal Age. As used in this report, the older San Antonio Formation is believed to be entirely Irvingtonian in age and the younger Temescal Formation is entirely Rancholabrean in age.

Deformed gravels with interbedded sand and clay in the San Francisco area have yielded an abundant Middle Pleistocene Irvingtonian fauna (Savage, 1951; Wahrhaftig et al., 1963; Jefferson, 1991a, 1991b). These fossiliferous deposits were called the Irvington Gravels by Savage (1951), a name which was accepted as a formal designation by Hall (1958) and Christensen (1987). The Irvington Gravels are distinctly folded and the strata dip as much as 20^{o} - 25^{o} (Savage, 1951; Louderback, 1951; Hall, 1958). Unconformably overlying the Irvington Gravels are comparatively flat-lying layers of younger alluvium. From my assessment of the stratigraphy and paleontology of the area, it appears that Savage's (1951) Irvington Gravels may be the coarse-grained, proximal alluvial fan deposits of the San Antonio Formation and the overlying, undeformed layers of younger alluvium the equivalent of the Rancholabrean-age Temescal Formation.

Paleontological Resource Inventory. An inventory of the paleontologic resources of each rock unit exposed in or near the proposed project site is presented below and the paleontologic importance of these resources is assessed.

The literature review and UCMP archival search conducted for this inventory documented no previously recorded fossil sites as occurring within the project site or linear corridors. However, a number of fossil sites occur near the proposed project site, and fossil remains were found at a previously unrecorded fossil site during the field survey of the proposed project site.

An abundance of Pleistocene and Holocene vertebrate fossils have been reported from sediments in the San Francisco Bay area. Hay (1929) noted numerous discoveries made between 1873 and 1927. Peabody (1945) added to this list. Surveys of Quaternary land mammal fossils have been made by Merriam (1915), Stirton (1939, 1951), Savage (1951), Lundelius et al. (1983), and Jefferson (1991b), and surveys of Quaternary birds, reptiles, and amphibians have been made by Miller and DeMay (1953) and Jefferson (1991a). Mammalian fossils have been the most helpful in determining the relative age of the alluvial fan and bay plain sedimentary deposits in the Bay area (Louderback, 1951; Savage, 1951). The mammalian inhabitants of the Holocene alluvial fan and flood plain included mammoths, mastodons, horses, bison, camels, ground sloths, and pronghorns. The age of the Late Pleistocene to Holocene Rancholabrean faunas was based on the presence of *Bison* and by the presence of many mammalian species which are inhabitants of the same area today. Fossils from the Irvington Gravels are Early to possibly Middle Pleistocene in age and are found in sediments referable to the San Antonio Formation of Lawson (1914). The mammals collected from this unit include mammoths, musk oxen, horses, peccaries, camels, deer, elk, pronghorns, ground sloths, saber-tooth cats, dire wolves, coyotes, foxes, gophers, mice, and squirrels (Peabody, 1945; Savage, 1951; Stirton, 1951; Louderback, 1951; Hall, 1958).

Temescal Formation. Remains of land mammals have been found at a number of localities in younger alluvial deposits referable to the Temescal Formation (Louderback, 1951; Savage, 1951; Stirton, 1951; Jefferson, 1991b). Jefferson (1991a, 1991b) compiled a data base of California Late Pleistocene (Rancholabrean North American Land Mammal Age) vertebrate fossils from published records, technical reports, unpublished manuscripts, information from colleagues, and inspection of museum paleontological collections at over 40 public and private institutions. He listed nine (9) individual sites in San Clara County that have yielded Rancholabrean vertebrate fossils, including several UCMP localities. These fossils would presumably all be referable to the Temescal Formation as used in this report. In addition to UCMP localities, Jefferson (1991a) listed in this area Rancholabrean-age vertebrate fossil localities of the USGS and Stanford University.

The most common fossils reported from Rancholabrean-age alluvial sediments in the San Francisco Bay area are the remains of extinct mammoths, bison, camels, horses, and ground sloths (Atwater et al. 1977). Radbruch and Schlocker (1958), Story et al. (1966), Goldman (1969b), Helley et al. (1972), and Atwater et al. (1977) have noted that Temescal Formation equivalent sediments locally also contain marine and freshwater invertebrate fossils (sponges, gastropods [snails], pelecypods [clams and oysters]), microfossils (foraminifera, ostracods, and diatoms), and plant remains (leaves, seeds, pollen, and wood). The age of these deposits apparently extends from latest Pleistocene to the Holocene. Lawson (1914) referred to the Temescal Formation as entirely Holocene in age, but Louderback (1951) believed that the bulk of the younger alluvium was actually Pleistocene in age. Based on the presence of fossil bison, Savage (1951) referred the younger alluvium to the Rancholabrean North American Land Mammal Age which spans the boundary between Late Pleistocene and Early Holocene.

UCMP and USGS vertebrate fossil localities in Rancholabrean-age sediments include sites scattered across the Santa Clara Lowland within the cities of Mountain View, Palo Alto, Menlo Park, Cupertino, Santa Clara, Sunnyvale, Milpitas, and San Jose. Unfortunately the exact location of some of these sites are not known. One site (UCMP locality V-4916) is described in museum records as being about 1.5 miles (2.4 km) west of Milpitas and 0.2 miles west of Coyote Creek. From this brief description this fossil site may be located immediately north or the proposed project site. At this site a single specimen of *Bison* sp. was discovered in Rancholabrean-age sediments referable to the Temescal Formation. Another UCMP fossil locality that includes the project site is UCMP V65415. This locality is located only on 1:250,000 museum maps only as a large circle east and northeast of Alviso. Large Rancholabrean-age mammals have been found within this generalized area. Another fossil locality was found approximately five miles (6.2 km) west of the proposed project site. This UCMP fossil locality, known as the Onizuka Air Force Base locality (UCMP site 91248), is located near the junction of the Alviso Freeway (Highway 237) and Mathilda Avenue in north Sunnyvale. This site and another UCMP locality located in Sunnyvale west of the project site have both produced land mammal fossils from Rancholabrean (Late Pleistocene to Holocene) sediments referable to the Temescal Formation. A third fossil locality within the city limits of Sunnyvale, USGS locality 1218, discovered during construction of the city sewage system, contained fossils of mammoth, camel, bison, horse, bear, and rodents. To the southwest of the proposed project site, just southeast of the junction of the Bayshore Freeway (Highway 101) and the Lawrence Expressway within the city limits of Santa Clara, UCMP locality 91128 produced vertebrate fossils of Rancholabrean-age large mammals.

Several other fossil localities are known from sites further away from the immediate project area, but still within the Santa Clara Lowland. In the vicinity of the City of Mountain View, USGS locality 1227, discovered during excavations for the Mountain View Landfill, produced fossils of ground sloth, mammoth, horse, camel, deer, bison, and several rodents. During construction of the Mountain View sewage treatment facility at Long Point northeast of Palo Alto at UCMP locality V-79134, additional large land mammal fossils were discovered. Hay (1927) has also reported a fossil mammoth from the City of Mountain View. In the vicinity of the City of Palo Alto, USGS locality 1203 in south-central Palo Alto, discovered during highway construction for the Alma Street underpass at Page Mill Road, produced Rancholabrean fossils of mammoth, camel, and horse. USGS localities 1001 and 1202, discovered during construction of the Veterans Hospital on Matadero Creek in south Palo Alto, yielded Rancholabrean fossils of ground sloth, mammoth, horse, rabbit, and several rodents. UCMP locality V-90003, discovered during excavation for foundations at the Molecular Medicine Building on the campus of Stanford University, also produced Rancholabrean land mammal fossils. Hay (1927) has also reported a mammoth specimen from Corte de Madera Creek on the campus of Stanford University in southwestern Palo Alto.

Atwater et al. (1977) reported megascopic plant fossils dated at 23,600 radiocarbon years found 6.0 miles (10km) east-southeast of Menlo Park at a depth of about 24 feet (8 m) below present sea level. Cedar, Douglas fir, oak, and redwood were identified from this locality.

These authors also reported abundant plant fragments and seeds of salt-marsh plants and chunks of wood from boreholes for bridge construction in southern San Francisco Bay.

Further north of the Los Esteros project site, Radbruch and Schlocker (1958) reported the recovery of fossils from borings in bay sediments in the Islais Creek area which they correlated with the Temescal Formation. Two localities in South San Francisco (UCMP localities V-6203 and V-6319) have also produced Rancholabrean faunas, including *Bison* and elk or moose. During construction of the San Francisco-Oakland Bay Bridge, part of a jaw of an extinct *Bison* with several teeth and a mammoth tooth were collected from sediments considered to be Late Pleistocene (Louderback, 1951) and probably equivalent to the lower Temescal Formation. These localities are now referred to as UCMP localities V-3411 and V-69186. Atwater et al. (1977) reported additional megascopic plant and animal fossils from borings for the Bay Bridge. Several additional Rancholabrean faunas (including UCMP locality V-3901 from Fleishhacker Beach) are located even further from the proposed project site but document the abundance of vertebrate fossil material that has been recovered from Pleistocene to Holocene sediments referable to the Temescal Formation.

San Antonio Formation. When naming the San Antonio Formation, Lawson (1914) noted that this unit contained bones of extinct vertebrates, including ground sloth, bison, mammoth, mastodon, horse, camels, and large carnivores. Savage (1951) questioned the exact stratigraphic position from which some of these specimens were obtained. Helley et al. (1972) also noted that the older alluvial fan deposits (San Antonio Formation equivalents) locally contain concentrations of continental vertebrate and also invertebrate fossils, and that their "older mud" map unit (Qom) contained continental vertebrate fossils, freshwater invertebrate fossils, and plant remains.

Stirton (1939) described an Early Pleistocene fauna from gravels exposed along the scarp of the Hayward Fault near Irvington, on the eastern side of the San Francisco Bay. Later, Savage (1951) named this site the type locality for the Irvingtonian North American Land Mammal Age. Lithologically similar and probably age-equivalent gravels occur elsewhere in the San Francisco Bay area. These gravels have also yielded Irvingtonian-age land mammal fossils (for instance UCMP localities V-6322, V-3602, V-3604, and V-3605) and are probably correlative with the Irvington Gravels.

No previously reported Irvingtonian-age faunas are known to directly underlie the proposed project site and none have been reported within one-mile of the proposed facility.

8.16.2 Environmental Consequences

Potential impacts on paleontological resources resulting from construction of the proposed project can be divided into construction-related impacts and operation-related impacts. Construction-related impacts to paleontological resources primarily involve terrain modification (excavations and drainage diversion measures). Paleontologic resources, including an undetermined number of fossil remains and unrecorded fossil sites; associated specimen data and corresponding geologic and geographic site data; and the fossil-bearing strata, could be adversely affected by (i. e., would be sensitive to) ground disturbance and earth moving associated with construction of the project. Direct impacts would result from grading for temporary roads, and the generating facility site; trenching for pipelines; augering for concrete piling and the foundations for electrical towers or poles; and any other earth-moving activity that disturbed or buried previously undisturbed fossiliferous rock, making the rock and its paleontologic resources unavailable for future scientific investigation. The potential environmental effects from construction and operation of the project on paleontological resources are presented in the following subsections.

8.16.2.1 Potential Impacts from Project Construction

The significance of potential adverse impacts of project-related earth moving on the paleontological resources of each stratigraphic unit likely to be exposed during project construction is presented in this section.

The Temescal Formation has yielded vertebrate fossil remains at numerous previously recorded fossil sites, including one locality near the property upon which the proposed project site is to be built. Therefore, because of the high potential for the loss or destruction of scientifically important fossil remains of the Temescal Formation, there is a high potential for adverse impacts on paleontological resources during project construction.

Although no occurrences of fossils are known in the San Antonio Formation within several miles of the proposed facility site, the presence of a number of previously recorded fossil sites in the San Francisco Bay area suggests that there is a low potential for additional similar fossil remains being uncovered by earth moving if the project is underlain by sediments of the San Antonio Formation at a shallow depth underlying the Temescal Formation. Therefore, because of the potential for loss of scientifically important fossil remains of the San Antonio Formation, adverse impacts on paleontological resources of this rock unit resulting from project-related earth moving are possible.

8.16.2.2 Potential Impacts from Project Operation

No impacts on paleontological resources are expected to occur from the continuing operation of the project or any of its related facilities.

8.16.3 Cumulative Impacts

If the project were to encounter paleontological finds during construction, the potential cumulative effect would be low, as long as mitigative measures were implemented to recover the resources. The mitigative measures proposed (Section 8.16.4) would effectively recover the value to science of significant fossils recovered.

8.16.4 Mitigation Measures

This section describes the potential mitigation measures that will be implemented to reduce potential adverse impacts to significant paleontological resources resulting from project construction. Mitigation measures are necessary because of potential adverse impacts of project construction on significant paleontological resources within both the Temescal Formation and the San Antonio Formation. The proposed paleontologic resource impact mitigation program would reduce, to an insignificant level, the direct, indirect, and cumulative adverse environmental impacts on paleontologic resources that might result from project construction. The mitigation measures proposed below for the project are consistent with CEC environmental guidelines (CEC, 2000) and with SVP standard guidelines for mitigating adverse construction-related impacts on paleontologic resources (SVP, 1991, 1995, 1996).

Prior to construction, a qualified paleontologist will be retained to both design and implement a monitoring and mitigation program during project-related earth-moving activities for deep excavation at the generating facility site, for deep boring for concrete piles and electrical transmission towers, and for construction of the water and natural gas pipelines. Prior to construction the paleontologist will conduct a limited field survey of exposures of sensitive stratigraphic units within the construction site that will be disturbed by earth-moving. Earth-moving construction activities will be monitored where this activity will disturb previously undisturbed sediment. Monitoring will not be conducted in areas where the ground has been previously disturbed or in areas where exposed sediment will be buried, but not otherwise disturbed.

The paleontological resource monitoring and mitigation program will include construction monitoring; emergency discovery procedures; sampling and data recovery, if needed; museum storage of any specimen and data recovered; preconstruction coordination; and reporting.

Prior to start of construction, construction personnel involved with earth-moving activities will be informed on the appearance of fossils and proper notification procedures. This worker training will be prepared and presented by a qualified paleontologist.

Implementation of these mitigation measures will reduce the potentially significant adverse environmental impact of ground disturbance and earth-moving on paleontological resources of the proposed project site to an insignificant level by allowing for the recovery of fossil remains and associated specimen data and corresponding geologic and geographic site data that otherwise might have been lost to earth-moving and to unauthorized fossil collecting.

With a well designed and implemented paleontological resource monitoring and mitigation plan, project construction could actually result in beneficial effects on paleontological resources through the possible recovery of fossil remains that would not have been exposed without project construction and, therefore, would not have been available for study. The recovery of fossil remains as part of project construction could help answer important questions regarding the geographic distribution, stratigraphic position, and age of fossiliferous sediments in the project area.

8.15.5 LORS Compliance

Paleontological resources are classified as non-renewable scientific resources and are protected by several federal and state statutes, most notably by the 1906 Federal antiquities Act and other subsequent federal legislation and policies and by State of California's environmental regulations (CEQA, Section 15064.5). Professional standards for assessment and mitigation of adverse impacts on paleontological resources have been established for vertebrate fossils by the SVP (1991, 1995, 1996). Design, construction, and operation of the proposed c* power generators, including transmission lines, pipelines, and ancillary facilities, will be conducted in accordance with all laws, ordinances, regulations, and standards (LORS) applicable to paleontological resources. Federal and state LORS applicable to paleontological resources are summarized in Table 8.16-2 and discussed briefly below, along with SVP professional standards.

TABLE 8.16-2.
LORS Applicable to Paleontological Resources Project

LORS	Applicability	AFC Reference	Conformity
Antiquities Act of 1906	Protects paleontological resources on federal lands	Section 8.16.5.1	Yes
CEQA, Appendix G	Fossil remains may be encountered by earth-moving	Section 8.16.5.2	Yes
Public Resources Code, Sections 5097.5/5097.9	Would apply only if some Project land were acquired by the State of California	Section 8.16.5.2	Yes

8.16.5.1 Federal LORS

Federal protection for significant paleontological resources would apply to the c*Power Los Esteros project if any construction or other related project impacts occur on federally owned or managed lands. Federal legislative protection for paleontological resources stems from the Antiquities Act of 1906 (PL 59-209; 16 United States Code 431 et seq.; 34 Stat. 225), which calls for protection of historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest on federal land.

8.16.5.2 State LORS

The CEC environmental review process under the Warren-Alquist Act is considered functionally equivalent to that of the California Environmental Quality Act (CEQA; Public Resources Code Sections 15000 et seq.) with respect to paleontological resources. CEQA's Appendix G (Public Resources Code Sections 21000 et seq.) lists among its significant effects when a project will "*disrupt or adversely affect . . . a paleontological site except as part of a scientific study*."

Other state requirements for paleontological resources management are in Public Resources Code Chapter 1.7, Section 5097.5, Archaeological, Paleontological, and Historical Sites. This statute specifies that state agencies may undertake surveys, excavations, or other operations as necessary on state lands to preserve or record paleontological resources. It would apply to the project only if the state or a state agency were to obtain ownership of project lands during the term of the project license.

County LORS

Santa Clara County does not have mitigation requirements that specifically address potential adverse impacts to paleontological resources.

8.16.5.4 Professional Standards

The SVP, a national scientific organization of professional vertebrate paleontologists, has established standard guidelines (SVP, 1991, 1995, 1996) that outline acceptable professional practices in the conduct of paleontological resource assessments and surveys, monitoring and mitigation, data and fossil recovery, sampling procedures, and specimen preparation, identification, analysis, and curation. Most practicing professional paleontologists in the nation adhere closely to the SVP's assessment, mitigation, and monitoring requirements as specifically spelled out in its standard guidelines.

8.16.6 Involved Agencies and Agency Contacts

There are no state or local agencies having specific jurisdiction over paleontological resources.

8.16.7 Permits Required and Permit Schedule

No state or county agency requires a paleontological collecting permit to allow for the recovery of fossil remains discovered by construction-related earth moving on private land.

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SECTION 9

Alternatives

A range of reasonable alternatives to the LECEF are identified and evaluated in this section. The alternatives include the "No Project" alternative (not developing a new power generation facility), alternative site location and design for constructing and operating a power generation facility, alternative combined cycle configurations to the combustion turbine and steam turbine arrangement currently proposed for the project, and alternative generating technologies. In addition, this section describes the site selection criteria utilized in determining the proposed location of the project. Transmission connection alternatives are addressed in Section 6 and alternative natural gas supply line routes are addressed in Section 7.

9.1 No Project Alternative

9.1.1 Description

If the "No Project" alternative is selected, c*Power would not receive authorization to construct and operate a new power generation facility. As a result, c*Power would violate the terms of its power purchase contract with the California Department of Water Resources. Furthermore, the U.S. Dataport project would not be self-sufficient per the conditions of the FEIR and would require electricity from the electrical grid. This would in turn require the data center project to install diesel generators to provide the needed electrical supply redundancy necessary to develop this type of facility, which would result in increased air quality and public health impacts over those of the proposed project.

9.1.2 Potential Environmental Impacts

The project will provide an efficient source of critical reliability electricity for U.S. Dataport and the deregulated market. The electricity will be produced consuming less fuel and discharging fewer air emissions for each energy unit generated when compared to other existing, older fossil fuel generation facilities, especially diesel-fired back-up generators (DBUGs).

Potential environmental impacts from the "No Project" alternative would result in greater fuel consumption and air pollution because new generating facilities, such as the project, would not be brought into operation to displace production from older, less efficient plants with dramatically higher levels of pollution causing air emissions. The displacement of DBUGs is important because of their significant threat to air quality and public health.

9.2 The Proposed Site

The site is located in north San Jose, California at 1515 Alviso-Milpitas Road. The site is north of State Highway 237 near Coyote Creek and its adjacent flood control channel which is to the east of the site. West of the site is WPCP buffer lands, north-west of the site is the Water Pollution Control Plant, and north of the site are WPCP sludge drying ponds. Figure 2.1-1 shows the location of the generating facility, electric transmission line, natural gas supply line, and water supply and return lines, and storm water discharge..

The project site is approximately 15 acres and is owned by c*Power. The property is being annexed into the City of San Jose and has been zoned Industrial. In the city's General Plan, the 55-acre parcel is designated Light Industrial.

9.3 Alternative Site Location and Design

9.3.1 Alternative Site and Design Description and Analysis

Location Alternative. Sites within the Edenvale Redevelopment Area located in south San Jose have been identified as an alternative location for the U.S. Dataport project, including the CREC. As such it is an alternative location for this project.

The vacant land in New Edenvale is designated on the General Plan and zoned for industrial park and office uses. Infrastructure is in place, although there is less fiber optic capacity than in the North San Jose area. The land in this redevelopment area is immediately available for development. Although this alternative might require a greater amount of time and effort to create a site large enough for the project, parts of the redevelopment area are available for development. This alternative would have less environmental impacts in the areas of transportation and visual resources. Air quality impacts would not be substantially reduced and noise impacts could increase under this alternative. Utility and service system impacts to the South Bay Water Recycling program would remain the same. To the extent that creating a viable size site would take longer, this alternative does not meet the applicant's objective of developing communications infrastructure to meet current market demand.

These alternatives were originally considered in the U.S. Dataport EIR, but are not currently proposed. *Alternatives F-1* and *F-2* address the location of a new PG&E substation under the proposed *Northeast San Jose Transmission Reinforcement Project*. *Alternative F-3* would be located on the Cilker property adjacent to Coyote Creek, the Lin-Hom (now c*Power) property immediately north of SR 237, and the WPCP buffer lands immediately east of Zanker Road and north of SR 237.

The U.S. Dataport EIR *Alternatives F-1* and *F-2* address the location of a new PG&E substation under the proposed *Northeast San Jose Transmission Reinforcement Project*. This PG&E project includes a new 7.3-mile-long transmission line from Alameda County to San Jose, a new substation, and upgrades to distribution lines and the existing Newark substation. Because of the uncertainties related to the siting of the nearby proposed PG&E substation, the U.S. Dataport project may be configured in several ways. Both Alternatives F-1 and F-2 involve smaller sites and a reduced amount of development. They are compatible with the site's General Plan designation and, therefore, are feasible from a planning and land use standpoint. These alternatives are slightly environmentally superior to the approved U.S. Dataport project. To the extent they represent a smaller development, they may be inconsistent with the project objectives related to meeting market demands and developing a facility of sufficient size to support the cost of required infrastructure.

Alternative F-3 would be located on approximately 115 acres, including 52 acres of the Cilker property adjacent to Coyote Creek, 22 acres of the Lin-Hom property immediately north of SR 237, and 41 acres of the WPCP buffer lands immediately east of Zanker Road and north of SR 237. Development would include up to 2.2 million square feet of building area configured in one-story and two-story buildings on individual parcels. A CREC would be located on WPCP buffer land north of the campus buildings. This alternative involves portions of the same site, is compatible with the site's General Plan designation and is, therefore, feasible from a planning and land use standpoint. Under Alternative F-3, the amount of landscaped area would be reduced by approximately 15-24 acres, however, transportation, air quality, biological resources, visual, and utilities and service systems impacts would be similar to those under the proposed project. This alternative is consistent with the objectives of the proposed project.

9.3.2 Selection of the Preferred Project Site

The first reason for selecting the proposed project site is its proximity to the U.S. Dataport Development Rezoning and Prezoning Project. The second reason is that the location is close to where there are large demands for electricity. The third reason is the proximity to all the required interconnecting facilities minimizes both environmental impacts and costs, and allows for a shorter construction period and more immediate relief to California’s Energy Crisis.

Land uses surrounding the proposed project site are compatible with the planned project. The proposed project site is adjacent to the U.S. Dataport Facility and the San Jose / Santa Clara Water Pollution Control Plant. Visual and noise impacts would also be equivalent or less significant at the preferred site due to the distance from residences and the industrial nature of the project area. In addition, development of the project would not conflict with the City of San Jose General Plan zoning as industrial.

The U.S. Dataport Final Environmental Impact Report (FEIR) determined that vacant land in the Edenvale area would be environmentally superior by reducing the traffic impacts of the project, the LECEF portion of the project does not result a significant traffic and transportation impact. Additionally, the FEIR states that acquisition of land in the Edenvale area would likely take longer to achieve and would not meet the project objectives. Finally, the longer linear facilities required for an Edenvale alternative may result in additional significant impacts.

Furthermore, in the Metcalf Energy Center Final Staff Assessment, Commission staff analyzed the potential of the proposed project site as an alternative site location (Alternative 1) and determined that the proposed project site would not result in unmitigated significant impacts. Therefore, additional alternative sites were rejected from consideration (FSA 2000).

9.4 Alternative Linear Facilities

Alternatives are not proposed for the cooling / process water supply, wastewater discharge line, natural gas pipeline, and the electrical line. The longest linear facility is the sanitary sewer line, a 2,700 foot pipeline, that primarily crosses land owned by the applicant or on an adjacent easement on City of San Jose Buffer Land.

A temporary alternative electrical transmission line 2,000-feet long would only be used if the proposed Los Esteros Substation is not available upon start-up of LECEF.

9.5 Alternative Project Configurations

The proposed nominal 180-MW configuration of the project is the result of a wide array of design and operating considerations. The main factors affecting the configuration include available gas turbine-generator sizes, economies of scale for both construction and operation of the plant, fuel supply logistics, power transmission capacities and forecast market demand for merchant plant power. The proposed design configuration consists of the latest generation of commercially demonstrated combustion gas turbine technology.

Other configurations were investigated including a larger capacity plant. After thorough review of the engineering, operations and market considerations, four combustion turbines providing a nominal 180-MW plant capacity configuration was selected as the most viable alternative for the project.

9.6 Alternative Technologies

The project will be a plant owned neither by a utility nor by an affiliate selling to its affiliated utility. The project is therefore a “merchant plant” as defined by the CEC in its Electricity Report (CEC, 1995). As a merchant plant, the project will be competing with other electricity generators in selling electricity in a deregulated market. The ability of the project to meet its obligations under the CWDR contract is paramount to the success of the project and the generating technology to be used for the project has therefore been carefully selected. Other technologies were considered using the selection methodology described below, but were rejected in favor of the natural gas-fired combustion turbine technology, which is the basis of this application. The selection methodology and other technologies considered are described in the following subsections.

9.6.1 Selection Methodology

Technologies considered were primarily those that could provide base load or load following power as opposed to those that would provide peaking or intermittent power. The reason for using this screening criterion was that the economic viability of the facility depends on its ability to sell as much electricity in the deregulated market as possible. Two intermittent technologies, however, with no fuel cost, solar and wind, were also examined to see if they might be economically viable in the deregulated electricity market.

The selection methodology included a stepped approach with each step containing a number of criteria. The selected technology would have to pass Steps 1 and 2 and provide the lowest or near lowest cost in Step 3. The steps are:

Step 1—Commercial Availability—The technology had to be proven commercially practical with readily available, reliable equipment at an acceptable cost.

Step 2—Implementable—The technology had to be implementable; that is, it could meet environmental, public safety, public acceptability, fuel availability, financial, and system integration requirements.

Step 3—Cost-Effective—The technology had to be cost competitive not only with existing generating units, but also with units that will probably enter the newly deregulated market near the time the project begins commercial operation. Cost included both capital and operation and maintenance (O&M) costs, which would translate into a busbar cost represented in cents per kilowatt hour.

The methodology was applied to a number of base load and load following technologies in the following subsections.

9.6.2 Technologies Reviewed

The technologies reviewed can be grouped according to the fuel used, which includes oil and natural gas, coal, nuclear reactions (usually using radioactive materials as fuel), water (hydro, ocean conversion, geothermal), biomass, municipal solid waste, and solar radiation.

9.6.2.1 Oil and Natural Gas

These technologies use oil or natural gas and include conventional boiler-steam turbine units, combustion turbines in various configurations, and fuel cells.

9.6.2.1.1 Conventional Boiler-Steam/Turbine. Fuel is burned in a furnace / boiler to create steam, which is passed through a steam turbine that drives a generator. The steam is condensed and returned to the boiler. This is an aging technology, which is able to achieve a maximum thermal efficiency on the order of 35 to 40 percent. Applying the review methodology, the technology is definitely commercially available, and could probably be implemented. Because of its relatively low efficiency, it tends to emit a greater quantity of air pollutants per kilowatt hour generated than more efficient technologies. Furthermore, its cost of generation is relatively high, on the order of 5.5 to 7.5 cents per kilowatt hour depending on fuel costs. This technology therefore does not satisfy Step 3 and was eliminated from consideration.

9.6.2.1.2 Supercritical Boiler-Steam/Turbine. This technology is basically the same as the conventional boiler-steam / turbine except that considerably higher pressures are employed. While the efficiency increases, more expensive materials are required to construct the units. Consequently, the cost of power produced is about the same as conventional units. Therefore, this technology was also eliminated.

9.6.2.1.3 Simple Combustion Turbine. This technology uses a gas or combustion turbine to drive a generator. Air is compressed in the compressor section of the combustion turbine, passes into the combustion section where fuel is added and ignited, and the hot combustion gases pass through a turbine, which drives a generator and the compressor section of the combustion turbine. The combustion turbines are relatively low capital cost and have efficiencies approaching 40 percent in the larger units. Because they are fast-starting and have a relatively low capital cost, they are used primarily for meeting high peak demand. Applying the review methodology, this technology is definitely commercially available, and could be implemented. The technology does satisfy Step 3 and has been chosen for this project.

9.6.2.1.4 Conventional Combined Cycle. This technology integrates combustion turbines and steam turbines to achieve higher efficiencies. The combustion turbine, which drives a generator, would normally exhaust its hot combustion gas to the atmosphere, but in the combined cycle technology, the exhaust gas is passed through a heat recovery steam generator creating steam, which is used to drive a steam turbine/generator. The resulting efficiency for the system is 50 to 54 percent, considerably above most other alternatives. This relative high efficiency results in relatively low air emissions per kilowatt hour generated and a relatively low cost of 3.5 to 5 cents per kilowatt hour. In addition, natural gas fuel emits little sulfur dioxide and little particulate matter. Applying the review methodology, this technology is definitely commercially available and can be implemented. Because of its high efficiency and low cost of generation, this technology satisfies Step 3. This technology is the one selected for the Phase II of the project.

9.6.2.1.5 Kalina Combined Cycle. This technology is similar to the conventional combined cycle except water in the heat recovery boiler is replaced with a mixture of water and ammonia. Overall efficiency is expected to be increased 10 to 15 percent. This technology, however, is still in the testing phase with tests recently completed on a 3-MW unit in Southern California. Applying the review methodology, the technology fails to pass Step 1 because it is not commercially available and was therefore eliminated from consideration.

9.6.2.1.6 Advanced Gas Turbine Cycles. There are a number of efforts to enhance the performance and/or efficiency of gas turbines by injecting steam, intercooling, and staged firing. These include the steam injected gas turbine (SIGT), the intercooled steam recuperated gas turbine (ISRGT), the chemically recuperated gas turbine (CRGT), and the humid air turbine (HAT) cycle. With the exception of the SITG, none of the technologies are commercially available and therefore fail to pass Step 1 of the review methodology. The SIGT is marginally commercially available and might pass Steps 1 and 2 of the review methodology, but its efficiency is lower than conventional simple cycle technology and therefore fails on Step 3 of the methodology. Consequently, all of these technologies were eliminated from consideration.

9.6.2.1.7 Fuel Cells. This technology uses an electrochemical process to combine hydrogen and oxygen to liberate electrons, thereby providing a flow of current. The types of fuel cells include phosphoric acid, molten carbonate, solid oxide, alkaline, and proton exchange membrane. With the exception of the phosphoric acid fuel cell and possibly the molten carbonate fuel cell, none of these technologies are commercially available and therefore fail Step 1. The phosphoric acid fuel cell has operated in smaller size units and molten carbonate fuel cell has completed testing. At this time, however, neither of these technologies are cost competitive with conventional simple cycle technology and, therefore, fail Step 3 of the review methodology.

9.6.2.2 Coal

The technologies that use coal for fuel include conventional furnace/boiler steam turbine/generator, fluidized bed steam turbine/generator, integrated gasification combined cycle, direct fired combustion turbine, indirect fired combustion turbine, and magnetohydrodynamics.

9.6.2.2.1 Conventional Furnace/Boiler Steam Turbine/Generator. Coal is burned in the furnace/boiler, creating steam that is passed through a steam turbine connected to a generator. The steam is condensed in a condenser, passed through a cooling tower and returned to the boiler. Designs include stoker, pulverized coal, and cyclone. The efficiency of this technology is equivalent to a conventional gas/oil fired steam turbine/generator unit (35 to 40 percent), but because of the usually lower price of coal compared to natural gas, the technology can be cost competitive under most conditions. The tons of air emissions per kilowatt hour generated by a coal plant are greater than for a conventional simple cycle because of the coal plant's lower efficiency, resulting in more fuel consumed per kilowatt hour. Applying the review methodology, the technology is definitely commercially available (Step 1). The technology should be implementable in California except for possible public perception that large coal-fired units cause visible air emissions. In addition, coal would have to be imported from outside California (resulting in increased truck and/or train traffic), and the time to construct a facility would probably be significantly greater that of a conventional simple cycle unit. The technology may therefore not pass Step 2. In addition, the generation cost of the technology could be greater than for a simple cycle (Step 3). Because of the potential problems under Step 2 and the potentially higher cost in Step 3, the technology was eliminated from consideration.

9.6.2.2.2 Atmospheric and Pressurized Fluidized Bed Combustion. Both of these technologies burn coal in a hot bed of inert material containing limestone that is kept suspended or fluidized by a stream of hot air from below. Water coils within the furnace create steam that drives a steam turbine/generator. The combustion chambers of the pressurized units operate at 150 to 250 psig to increase efficiency. Efficiencies of atmospheric units atmospheric fluidized bed combustion (AFBC) are on the order of 35 to 40 percent, and pressurized units (pressurized fluidized bed combustion [PFBC]) are between 40 and 45 percent. The technology is commercially available for the AFBC technology at least up to the 160-MW size. The PFBC technology is not commercially available. Applying the review methodology, the AFBC may pass Step 1, but the PFBC is eliminated from consideration. Implementation of the AFBC technology in California is possible, particularly for cogeneration applications (several new units have recently been constructed). Coal would have to be imported from outside California, increasing train and truck traffic. The technology should therefore pass Step 2. The generation cost of the technology, however, could be greater than for a simple cycle (Step 3). Due to the potentially higher cost, the AFBC technology was eliminated from consideration.

9.6.2.2.3 Integrated Gasification Combined Cycle. Integrated gasification combined cycle (IGCC) gasifies coal to produce a medium Btu gas that is used as fuel in a combustion turbine, which exhausts to a heat recovery steam generator that supplies steam to a steam turbine/generator. The coal gasifier is located at the same site as the combustion turbine, HRSG, and steam turbine/generator and is sized to supply the combustion turbine and integrated with it and the rest of the equipment to provide an integrated generating system. While a 100-MW unit has been fully tested in California, the technology is probably not fully commercially available. Applying the review methodology, the IGCC will not pass Step 1. Implementation of the IGCC technology in California is possible except that coal would have to be imported from outside California (resulting in increased truck and / or train traffic). The generation cost of the technology could be competitive with a conventional gas-fired simple cycle (Step 3) but this is a relatively unknown factor. Due largely to the probable lack of full commercial availability, IGCC technology was eliminated from consideration.

9.6.2.2.4 Direct and Indirect Fired Combustion Turbines. Direct-fired units burn finely powdered coal directly in the combustion chamber of the combustion turbine while indirect-fired units burn the coal in a fluidized bed or other combustor, and use a heat exchanger to transfer the heat from the combustion gases to air, which is then expanded through the turbine. Neither of these units is commercially available; they therefore fail to pass Step 1 of the selection methodology and were eliminated from consideration.

9.6.2.2.5 Magnetohydrodynamics. High temperature (3,000ºF) combustion gas is ionized and passed through a magnetic field to directly produce electricity. This technology is not commercially available; therefore, it fails to pass Step 1 of the review methodology and was eliminated from consideration.

9.6.2.3 Nuclear

This technology includes nuclear fission and nuclear fusion. Nuclear fission breaks atomic nuclei apart, giving off large quantities of energy. For nuclear fission, pressurized water reactors (PWRs) and boiling water reactors (BWRs) are commercially available. Also for nuclear fission, there are high temperature gas cooled reactors (HTGCRs) and liquid metal fast breeder reactors (LMFBRs), which are not commercially available. While nuclear fission is a viable base load technology heavily used in France and Japan, it is currently out of favor politically in the U.S. and particularly in California. In addition, California law prohibits new nuclear plants until the scientific and engineering feasibility of disposal of high level radioactive waste has been demonstrated. The CEC has to date been unable to make the findings of disposal feasibility required by law for this alternative to be viable in California. The technology therefore is not implementable and fails to pass Step 2 of the review methodology. The technology was therefore eliminated from consideration.

Nuclear fusion forces atomic nuclei together at extremely high temperatures and pressures, giving off large quantities of energy. Nuclear fusion is not available commercially and it is not clear if or when it will become available. The technology, therefore, fails to pass Step 1 of the review methodology and was eliminated from consideration.

9.6.2.4 Water

These technologies use water as “fuel,” and include hydroelectric, geothermal, and ocean energy conversion.

9.6.2.4.1 Hydroelectric. This technology uses falling water to turn turbines that are connected to generators. A flowing river, or more likely a dammed river, is required to obtain the falling water. This technology is commercially available. Most of the sites for hydroelectric facilities have already been developed in California and any remaining potential sites face formidable environmental licensing problems. It is doubtful that this technology could be implemented and it would therefore fail to pass Step 2 of the review methodology. If a proposed project could pass Step 2, the cost would probably be considerably higher than the cost of a conventional simple cycle, which would cause its elimination under Step 3 of the review methodology. It was therefore eliminated from consideration.

9.6.2.4.2 Geothermal. These technologies use steam or high-temperature water (HTW) obtained from naturally occurring geothermal reservoirs to drive steam turbine/generators. There are vapor dominated resources (dry, super-heated steam), and liquid-dominated resources (HTW), which use a number of techniques to extract energy from the HTW. Geothermal is a commercially available technology. However, geothermal resources are limited, and most if not all economical resources have been discovered and developed in California. C*Power is in the process of developing a geothermal project at the Glass Mountain Known Geothermal Resource Area (KGRA) in Siskiyou County. Geothermal development is not viable at the project location. It was therefore eliminated from consideration.

9.6.2.4.3 Ocean Energy Conversion. A number of technologies use ocean energy to generate electricity. These include tidal energy conversion, which uses the changes in tide level to drive a water turbine/generator; wave energy conversion, which uses wave motion to drive a turbine/generator; and ocean thermal energy conversion, which employs the difference in water temperature at different depths to drive an ammonia cycle turbine/generator. While all of these technologies have been made to work, they are probably not fully commercially available. Even if they were commercially available, they are considerably more costly than conventional simple cycle technology and they would therefore fail Step 3 of the review methodology. They were therefore eliminated from consideration.

9.6.2.5 Biomass

Major biomass fuels include forestry and mill wastes, agricultural field crop and food processing waste, and construction and urban wood wastes. Several techniques are used to convert these fuels to electricity, including direct combustion, gasification, and anaerobic fermentation. While these technologies are available commercially on a limited basis, their cost tends to be high relative to a conventional simple cycle unit burning natural gas. This technology, therefore, does not pass Step 3 of the review methodology and was eliminated from consideration.

Municipal solid waste (MSW) consists of extracting energy from garbage by burning or other means such as pyrolysis or thermal gasification and is commonly referred to as waste to-energy (WTE). The best known methods incorporate mass burn and refuse derived fuel (RDF) facilities. Both mass burn and RDF are commercially available methods of MSW technology. Other methods are co-firing with coal, using fluidized-bed furnace/boilers, and pyrolysis or thermal gasification. There is only one 10-MW mass burn unit operating in California and no RDF facilities or facilities using the other methods. The economic feasibility of MSW technology depends heavily on the level of the “tipping fee” in the vicinity of the MSW facility. The tipping fee is the price charged by landfills for depositing waste or garbage in the landfill, and it is usually expressed in dollars per ton. In effect, a waste collection company would pay the WTE facility for taking and burning its garbage, resulting in a negative fuel cost to the WTE. A recent study for development of a WTE facility in the San Francisco area estimated that the tipping fee would have to be approximately $80 per ton for a facility to be economical. The current market tipping fee in the area ranges from $30 to $40 per ton. This technology therefore fails to satisfy Step 3 of the review methodology, which requires the technology to be cost competitive. This technology was therefore eliminated from consideration.

9.6.2.6 Solar

9.6.2.6.1 Radiation. Solar radiation (sunlight) can be collected directly to generate electricity with solar thermal and solar photovoltaic technologies or indirectly through wind generation technology in which the sunlight causes thermal imbalance in the air mass, creating wind. Wind generation and two types of solar generation, thermal conversion and photovoltaics, were considered as alternative technologies to the simple cycle. These are described in the following subsections.

9.6.2.6.2 Thermal. Most of these technologies collect solar radiation, heat water to create steam, and use the steam to power a steam turbine/generator. The primary systems that have been used in the U.S. capture and concentrate the solar radiation with a receiver. The three main receiver types are mirrors located around a central receiver (power tower), parabolic dishes, and parabolic troughs. Another technology collects the solar radiation in a salt pond and then uses the heat collected to generate steam and drive a steam turbine/generator. While one of these technologies might be considered to be marginally commercial (parabolic trough), the others are still in the experimental stage. All require considerable land for the collection receivers and are best located in areas of high solar incidence. In addition, power is only available while the sun shines so the units do not supply power when clouds obscure the sun or from early evening to late morning. These factors translate into high cost, on the order of 6 to 12 cents per kilowatt hour, which is well above the market generation price. These systems for the most part fail Step 1, commercial availability, and may not be implementable due to land unavailability and/or the ability to finance. They all, however, fail in being cost effective and therefore were eliminated from consideration.

9.6.2.6.3 Photovoltaic. This technology uses photovoltaic “cells” to convert solar radiation directly to direct current electricity, which is then converted to alternating current. Panels of these cells can be located wherever sunlight is available. This technology is environmentally benign and is commercially available, since panels of cells can theoretically be connected to achieve any desired capacity. While this technology may have a bright future, at the current time the cost is very high, on the order of 15 to 25 cents per kilowatt hour. The technology fails Step 3, cost-effectiveness, and was therefore eliminated from consideration.

9.6.2.6.4 Wind Generation. This technology uses a wind-driven rotor (propeller) to turn a generator and generate electricity. Only certain sites have adequate wind to allow for the installation of wind generators and most of the sites that have not been developed are remote from electric load centers. Because even in prime locations the wind does not blow continuously, capacity from this technology is not always available. In California, the average wind generation capacity factor has been 25 to 30 percent. In addition, the technology cannot be depended upon to be available at system peak load since the peak may occur when the wind is not blowing. The technology is commercially available and probably implementable at certain sites, although financing may not be available due to its perceived risk. The technology is relatively benign environmentally although land consumption and effects on raptors are a concern. The cost of generation is on the order of 5 to 10 cents per kilowatt hour, which is above the cost of the preferred alternative. Due to the remoteness of feasible sites, infrequent availability, and relatively high cost, this technology was eliminated from consideration.

9.6.3 Conclusions

All feasible technologies that might be available for base load and load following operation in California were reviewed using a methodology, which incorporated commercial availability, ability to implement, and cost effectiveness. Although some technologies other than the simple cycle burning natural gas were commercially available and could be implemented, most would not result in fewer environmental effects than the natural gas-fired simple cycle. In addition, all alternatives, commercially available, implementable technologies were less cost effective than the simple cycle and would therefore not be competitive in the deregulated electricity market. It is concluded, therefore, that the conventional simple cycle technology using natural gas, as fuel is the best available technology and the one that should be employed for the project.

9.7 References

California Energy Commission (CEC). 1995. 1994 Biennial Electricity Report (ER94), P300-95-002. November.

California Energy Commission. Final Staff Assessment (FSA), Metcalf Energy Center. October 2000.

SECTION 10

Engineering

In accordance with CEC regulations, this section and its related appendices and Sections 5, 6, and 7 present information concerning the design and engineering of LECEF. Section 10.1 describes the design of the facility with reference to Section 2, the Project Description. Section 10.2 discusses the reliability of LECEF, and Section 10.3 presents the estimated thermal efficiency of the facility. Section 10.4 describes the LORS applicable to LECEF engineering, identifies agencies that have jurisdiction, and Section 10.5 provides the contact persons within those agencies.

10.1 Facility Design

A detailed description of the LECEF project is provided in Section 2.2, Generating Facility Description, Design, and Operation. Design for safety is provided in Section 2.3, Facility Safety Design Standards.

Summary descriptions of the design criteria are included in: Appendix 10A, Civil Engineering Design Criteria; Appendix 10B, Structural Engineering Design Criteria; Appendix 10C, Mechanical Engineering Design Criteria; Appendix 10D, Electrical Engineering Design Criteria; Appendix 10E, Control Engineering Design Criteria; Appendix 10F, Chemical Engineering Design Criteria; and Appendix 10G, Geologic and Foundation Criteria.

Design and engineering information and data for the following systems are found in the following parts of the AFC:

- **Power Generation** – See Section 2.2.4 regarding the CTG. Also see Appendix 10C and Sections 2.2.5 through 2.2.9, which describe the various plant auxiliaries.
- **Heat Dissipation** – See Section 2.2.8, Plant Cooling System, and Appendix 10C.
- **Cooling Water Supply System** – See Section 2.2.7, Water Supply and Use, Section 2.2.7.4.1, Water for the Circulating Water System, Sections 2.2.8.4.2. through 2.2.7.4.3, which describe other water systems, and Appendix 10F.
- **Air Emission Control System** – See Section 2.2.11, Emission Control and Monitoring, and Section 8.1, Air Quality.
- **Waste Disposal System** – See Section 2.2.9 and 8.13, Waste Management.
- **Noise Abatement System** – See Section 8.5, Noise, and Appendix 10C.
- **Switchyards/Transformer Systems** – See Section 2.2.5, Major Electrical Equipment and Systems; 2.2.23.2, Grounding; Section 2.2.5.1, AC Power-Transmission; Section 2.2.24, Interconnect to Transmission Line; Section 6, Electric Transmission; and Appendix 10D, Electrical Engineering Design Criteria.

10.2 Reliability

This section discusses the availability of fuel, the expected service life of the plant, and the degree of reliability to be achieved by LECEF.

10.2.1 Fuel Availability

The new, dedicated supply pipeline to LECEF will be connected to PG&E's existing Lines 101 and 109, major, high-pressure backbone transmission lines capable of delivering the required quantity of gas to LECEF. It is conceivable that PG&E's lines or the new branch pipeline from Lines 101/109 to the LECEF could become temporarily inoperable if there is a breach in one of the lines or from other causes, resulting in fuel being unavailable at LECEF. The LECEF facility has no backup fuel supply and would, therefore, have to be shut down until the situation was corrected.

10.2.2 Plant Availability

LECEF will be a peaking facility, which may possibly, in the future, be converted to a high reliability energy center to provide dedicated power to a data center. The facility will operate as dictated by contractual power supply obligations to the Department of Water Resources. LECEF will be designed to operate between approximately 25 and 100 percent of baseload to support California electrical requirements. LECEF will be designed for an operating life of 30 years in anticipation of conversion to combined cycle within one to three years. Reliability and availability projections are based on this operating life. Operation and maintenance procedures will be consistent with industry standard practices to maintain the useful life status of plant components.

The LECEF simple-cycle power block will consist of four natural gas-fired CTGs. The simple cycle power block will be converted to combined cycle within one to three years after startup. The CTG power block is projected to operate between 50 and 100 percent of the time during each year of its operating life. The percentage of time that the power block is projected to operate is defined as the "service factor." The service factor considers the amount of time that a unit is operating and generating power, whether at full or partial load. The projected service factor for the power block, which considers projected percentage of time of operation, differs from the "equivalent availability factor" (EAF), which considers the projected percentage of energy production capacity achievable. EAF is defined as a weighted average of the percentage of full energy production capacity achievable. The projected EAF for LECEF is estimated to be in the range of 92 to 98 percent. The EAF differs from the "availability of a unit," which is the percentage of time that a unit is available for operation, whether at full load or partial load or on standby.

Cooling tower makeup water for LECEF will be recycled water from the SBWR; During simple cycle operation, no backup supply will be provided. Process makeup water will be derived via a water treating system from the recycled water supply. Water for potable use at LECEF will be trucked-in to the site.

Waste disposal consists of nonhazardous cooling water and other nonhazardous industrial wastewater streams. This combined stream will be returned to the San Jose sewer system. Sanitary sewer wastes will be discharged to the San Jose Wastewater Treatment Facility. A local nonhazardous waste collector will collect solid waste. Most hazardous wastes will be collected and recycled by permitted recycling firms, and hazardous wastes that cannot be recycled will be collected by a licensed hazardous waste hauler and deposited in a licensed hazardous waste landfill. For detailed information on the use of hazardous materials and management of wastes, see Sections 8.12 and 8.13.

There are no known geologic hazards other than the remote possibility of a major earthquake (see Section 8.15).

Deterioration of output capacity and efficiency of LECEF over time, called maturation, is expected to be on the order of 2 to 3 percent over a 3-year period. Cleaning, maintenance, or overhaul will recapture most of the loss. Over the expected 30-year life of the facility, the estimated total, nonrecovered loss in output and efficiency will be on the order of 1 to 2 percent.

10.3 Efficiency

The maximum thermal efficiency that can be expected from an aero-derivative natural gas-fired simple-cycle plant is approximately 38 percent. This level of efficiency is achieved when a facility is base-loaded. Other types of operations, particularly those at less than full gas turbine output, will result in lower efficiencies. The basis of LECEF operations will be primarily pre-established contractual obligations to provide electricity to the California Department of Water Resources. Potential operating scenarios for the plant vary from a very low facility capacity factor to an essentially base-load plant. The number of plant startup and shutdown cycles is expected to range between zero and 300 per year per CTG. The actual number of hot startups and cold startups cannot be predicted at this time.

Plant fuel consumption will depend on the operating profile of the facility. It is estimated that the range of fuel consumed by the facility will be from a minimum of near zero Btus per year to a maximum at base load, with the maximum water injected power augmentation.

LECEF's net annual electrical production cannot be forecast accurately at the present time because the plant will operate in a deregulated environment. The maximum annual generation possible from the facility is estimated to be between 1,580 and 1,630 gigawatt hours (GWh). The amount of power generated during plant startups and shutdowns can also only be estimated roughly. The range of startup / shutdown generation possible begins near zero megawatt hours (MWh) per year and increases to a maximum of 250 to 300 GWh per year.

The number of hours LECEF will operate at various logical load points will depend ultimately on requirements of the Department of Water Resources and the state of California. Possible operating scenarios are discussed in Section 2.2.16, Plant Operation.

Alternative generating technologies might be usable in place of the simple-cycle technology chosen for LECEF. The efficiencies of these alternatives will vary with the technologies (see Section 9).

10.4 Laws, Ordinances, Regulations, and Standards (LORS)

The LORS that are applicable to the design of LECEF are referenced in Table 10.4-1 below. LORS applicable to the environmental areas of the AFC (sections 8.1 through 8.16) are contained within each of the environmental sections. The project will conform to all of these LORS.

The Appendices to Section 10 contain the discipline design criteria that will be used in LECEF design. Appendix 10A and Appendix 10B address the physical design criteria for the site-related features, structures, and foundations of the facility.

Appendices 10.1C through 10.1F provide the design criteria for LECEF systems and equipment, including the codes and standards that apply to the design, materials, fabrication and erection of the systems and equipment. The project will also comply fully with these codes and standards.

Appendix 10G, Geologic and Foundation Criteria, include the results of the subsurface investigation, laboratory testing program, and preliminary geotechnical assessment of LECEF. The preliminary foundation design considerations and criteria are provided for LECEF structures in Appendix 9G.

TABLE 10.4-1
Applicable Laws, Ordinances, Regulations, and Standards

LORS	Location in AFC for Facility Design Compliance	Conformance
Federal:		
Occupational Safety and Health Act (OSHA) – 29CFR1910 and 29CFR126	Section 10	Meet Requirements
Environmental Protection Agency (EPA) – 40CFR60, 40CFR75, 40CFR112, 40CFR302, 40CFR423, 40CFR50, 40CFR100, 40CFR260, 40CFR300, and 40CFR400	Section 8 & 10	Meet Requirements
Federal Aviation Agency (FAA) – Obstruction Marking and Lighting AC No. 70/74601H	Section 6 & 10	Meet Requirements
California:		
California Code of Regulations (CCR) – Title 8, Sections 450 and 750 and Title 24, 1995, Titles 14, 17, 19, 20, 22, 23, and 26.	Section 10	Meet Requirements
California Department of Transportation (Cal-DOT)-Standard Specifications	Section 10	Meet Requirements
California Occupational Safety and Health Administration (Cal-OSHA) – Regulations and Standards	Section 10	Meet Requirement
California Business and Professions Code – Sections 6704, 5730, and 6736	Section 10	Meet Requirements
California Vehicle Code – Section 35780	Section 10	Meet Requirements

TABLE 10.4-1
Applicable Laws, Ordinances, Regulations, and Standards

LORS	Location in AFC for Facility Design Compliance	Conformance
California Labor Code – Section 6500	Section 10	Meet Requirements
Local:		
City of San Jose – Regulations and Ordinances	Section 10	Meet Requirements
County of Santa Clara – Regulations and Ordinances	Section 10	Meet Requirements
Industrial:		
Civil Engineering Design Criteria	Appendix 10A	Meet Design Criteria
Structural Engineering Design Criteria	Appendix 10B	Meet Design Criteria
Mechanical Engineering Design Criteria	Appendix 10C	Meet Design Criteria
Control Engineering Design Criteria	Appendix 10E	Meet Design Criteria
Chemical Engineering Design Criteria	Appendix 10F	Meet Design Criteria
Geologic and Foundation Design Criteria	Appendix 10G	Meet Design Criteria

10.5 Involved Agencies and Agency Contacts

Any permits issued for design and construction would come through the San Jose Department of Planning and Building. A point of contact is provided in Table 10.5-1.

TABLE 10.5-1
Agency Contacts

Agency	Contact	Telephone
San Jose Dept. of City Planning and Building 801 N. First Street, Rm. 400 San Jose, CA 95110	Laurel Prevetti	(408) 277-4576
County of Santa Clara Planning Office 70 West Hedding Street San Jose, CA 95110	Michael Lopez	Same as above

10.6 Permits and Permitting Schedule

All engineering permits for design will be coordinated with the city planning department as part of the Planned Development Zoning Application. The Planned Development Zoning Application would likely be filed with the city in August 2001 and could take 3 months to obtain.